

Grade 5 Math Scoring Guidance

2015-2016 NYC End-of-Year Performance Tasks

Instructions

- The following pages contain guidance on the scoring of the above-named NYC Performance Task.
- Distribute this guide to all staff scoring the task. *Please note: End-of-Year tasks may be administered by the regular classroom teacher but **may not be scored** by the regular classroom teacher.*
- The scoring guidance is intended to be used in conjunction with the rubric, which details indicators of performance levels on all rubric traits.

Overview of the NYC Performance Tasks

The NYC Performance Tasks are comparable baseline and End-of-Year, open-ended assessment pairs that are offered in math, ELA, science, and social studies and promote the instructional shifts of argument and critique, use and analysis of evidence, and exposure to complex texts. The tasks are designed for students to demonstrate their skills in reviewing and analyzing presented evidence and creating an evidence-based argument.

The tasks respond to and support the diversity of curriculum and instruction that exist across NYC schools and act as a resource in these varied settings to support collaborative discourse around curriculum, instruction, and assessment. Tasks are designed to support the Citywide Instructional Expectations by promoting knowledge of students, facilitating alignment to an instructional focus, and developing a culture of collaborative professional learning.

A skills-based, standards-driven rubric accompanies each task and, where feasible, is content agnostic so that it can be used in a variety of ways with other curricular and instructional materials. Rubrics are aligned to the Common Core standards and content-specific New York State standards where appropriate. Topic selection in each grade and subject was influenced by New York City scope and sequence documents.

The following scoring guide structure was adapted from CPET and provides annotated student work samples that show the relationship between the student response and the criteria in the rubric. A matrix of rubric scores and rationales follows each individual student work sample. The guide can also be used to norm scoring practices across teams of educators.

Design Principles for the Math Performance Tasks

Focus Standards

While there may be multiple Common Core standard alignments (partial or full) for each trait in the rubric, the focus standards are used to inform design consistency across grades. In math, the Practices are used as the unifying design principle across grades in lieu of content standards. Grade-level content standard alignment is represented on each rubric.

- MP1: Make sense of problems and persevere in solving them
- MP4: Model with mathematics

See the last page of this guide for a chart of standards alignment per rubric trait across all grade levels.

Design Concept

The design concept for math addresses the following in each grade band:

Grades K-1

- Inventory

Grades 2-12

- Presentation of context
- Multiple mini-task questions addressing that one context

Content and Structure

The topic (e.g., "plants") in each task is used to provide context for students to demonstrate mastery of the focus standards and content standards in math. The design of the task is not for students to demonstrate content knowledge on any particular topic. The content standards chosen represent the major work of the grade, and are structured to measure both discrete and complex skill mastery. Unlike other subject area rubrics, rubric traits in math measure the total allowable score points per question; therefore, not every trait on the rubric has descriptors through four points.

Grade 5 Math Scoring Guidance

Task Overview

NYC Mathematics Performance Tasks are mathematics tasks in which students are presented with a series of connected questions. Each question on the task is intended to address understanding and proficiency of mathematical content, as well as engagement with mathematical practices.

Student Task

Students produce **a numerical** and/or written response. Sample student responses have been provided to you; further information regarding these annotated student works are provided below.

Evaluator Task

You are being asked to use your best, professional judgment to score these student responses using the rubric provided.

General Instructions for Using the Rubric

- (1) Scorers will use the separate rubric provided to assess student performance.
- (2) These traits are being scored for content and practice. Point values may vary from question to question, and there is no eligible point value for areas on the rubric that are blank.
- (3) You are to provide one score for each rubric trait. Please be sure to enter all trait scores on the appropriate Schoolnet Answer Sheet for each student. The final score for the task will be calculated elsewhere.
- (4) All student work in the task booklet should be scored, regardless of whether the student completed or attempted every question.
- (5) A score of “Zero (0) – No attempt” should be considered carefully before being used. See included student work samples for guidance. Scores of “Zero (0) – No attempt” should only be given if:
 - (a) a student did not attempt that question on **any portion** of the task, or
 - (b) if his/her work is **completely copied** directly from the task or texts, or
 - (c) if his/her work is completely unrelated to the question or prompt.

Annotated Student Work

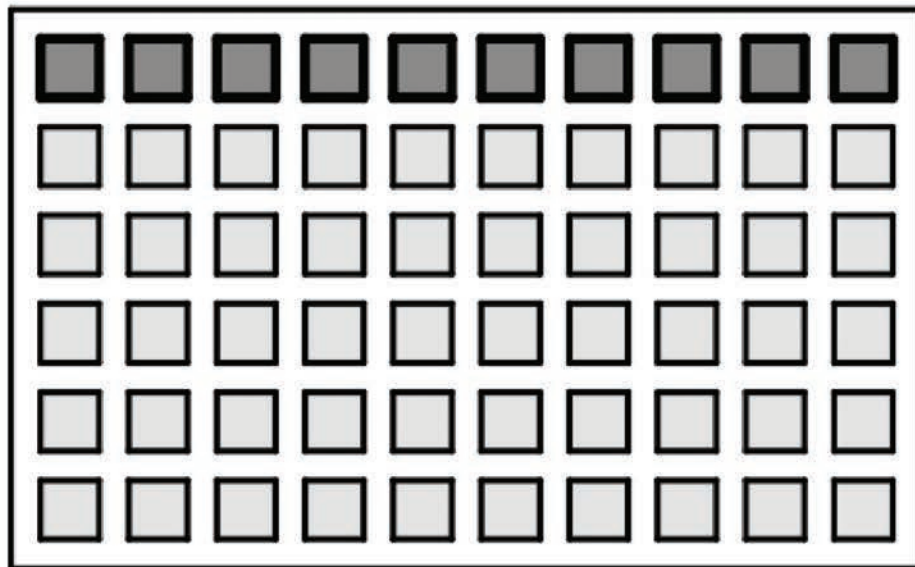
The following pages include annotated student work samples at a variety of performance levels. The samples have been annotated to highlight student responses in relation to the rubric traits. Each sample is followed by a summary page indicating the sample’s score on each rubric trait, in addition to the reasoning for the score. Please review these samples both independently and **with a team** to ensure a common understanding of the rubric traits at all performance levels.

Best Practices for Scoring

- Before scoring a specific task, teacher **teams** should review the task and the rubric and discuss expected performance at each level for each rubric trait.
- As a group, review annotated student work and **discuss evidence for each score**, including discussing non-blank, zero-scored traits. Work to understand the provided scores and rationales for one sample.
- Individually score a few provided student work samples. After working individually, **compare your assigned scores** to those given by others and to the provided scores and rationales. Be sure you understand how each score was assigned, and that your team agrees, before moving to independent work.
- After independently completing a set of student work from your school, review the set with the group to see if you have drifted away from your original scoring, becoming either more severe or more lenient in response to the task. Consistent scoring is important.

School Garden

ABC Elementary School has grades Kindergarten through 5. They are starting a school garden that is made up of rows of equal-sized plots with room to walk in between. Each grade gets a fraction of the garden based on the number of students in that grade. The more students a grade has, the more of the garden the grade can use for planting. The garden is shown below:

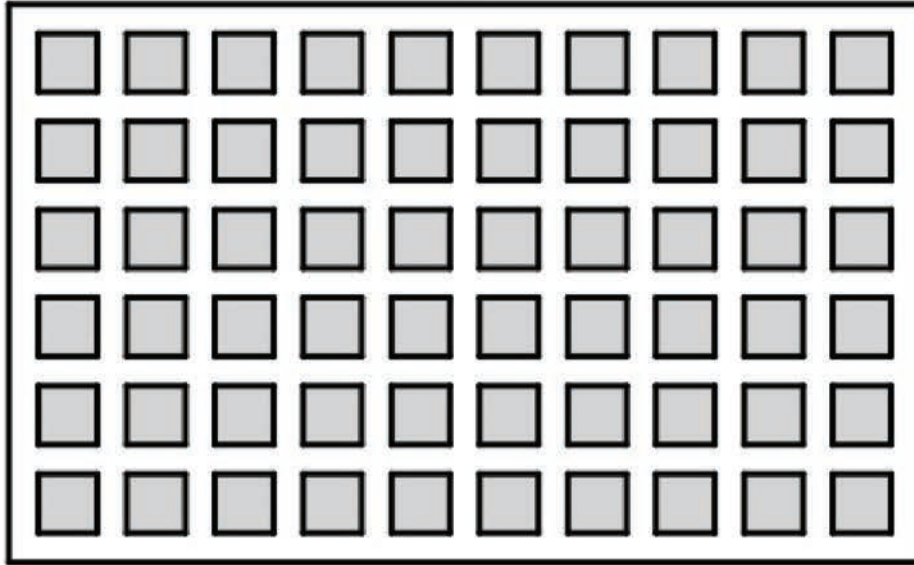


- 1 Grade 1 will plant in the top row of the school garden.

What fraction of the whole school garden does Grade 1 use? $\frac{1}{6}$

T1

The response shows understanding that a fraction a/b is represented by the quantity formed by a parts of size $1/b$. The response also shows an understanding of equivalent fractions, showing a simplified fraction ($10/60 = 1/6$).



- 2 Grade 2 will plant $\frac{1}{4}$ of the whole school garden. So far they have planted $\frac{1}{6}$ of the whole school garden.

What fraction of the whole school garden still needs to be planted by Grade 2?

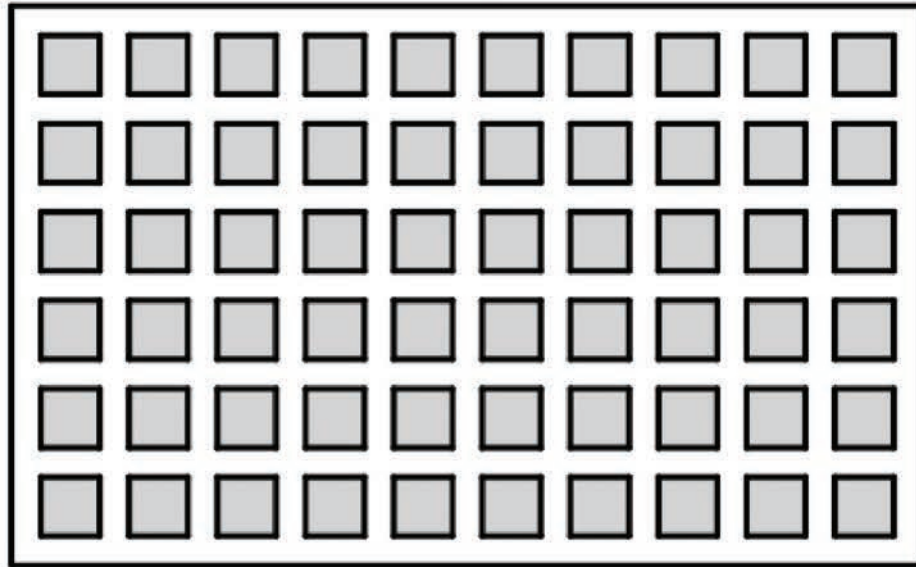
$\frac{2}{24}$

Show your work.

$$\frac{1}{4} \times \frac{6}{6} = \frac{6}{24} - \frac{1}{6} \times \frac{4}{4} = \frac{4}{24}$$

T2

The response shows a correct process of subtracting fractions with unlike denominators, replacing each with equivalent fractions to find a result with like denominators. The response also shows a strategic understanding of the application of subtraction in order to find the fraction of the garden to be planted.



- 3 Later in the school year, Grades 2 and 3 will combine their sections to grow watermelon for the Spring Festival. Grade 2 will plant $\frac{1}{4}$ of the whole school garden and Grade 3 will plant $\frac{1}{10}$ of the whole school garden.

What fraction of the whole school garden will be used in the spring to grow watermelon?

35/100

Show your work.

$$1/4 = .25$$

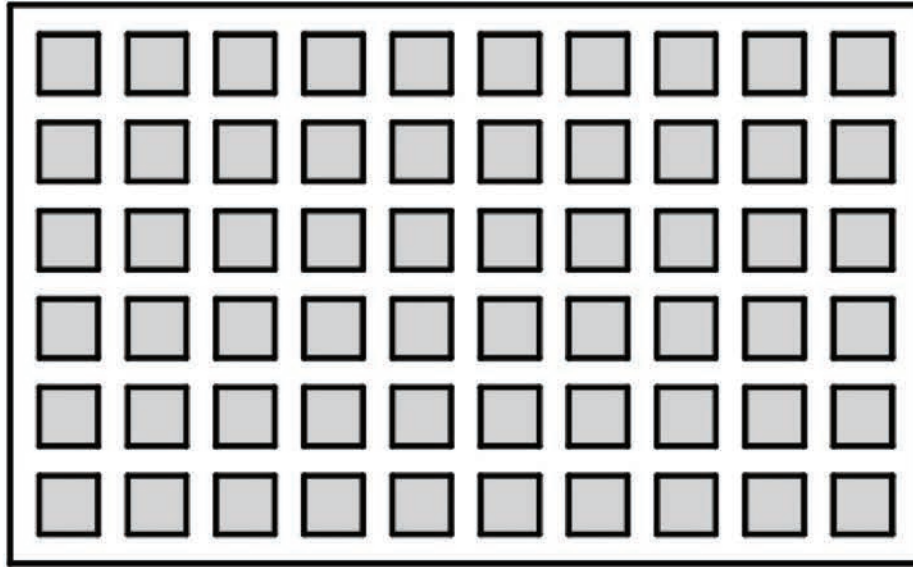
$$1/10 = .1$$

$$.25 + .1 = .35$$

$$.35 = 35/100$$

T3

The response demonstrates a correct process for finding the fraction of the school garden to be used to grow watermelon. The response shows an understanding of adding fractions with unlike denominators, replacing each with equivalent decimals to find a decimal total, which is rewritten as a fraction. The response also shows an understanding of the relationship between decimals and fractions.



- 4 Grade 4 will plant $\frac{3}{20}$ of the whole school garden. They will use $\frac{1}{3}$ of their plot to plant carrots.

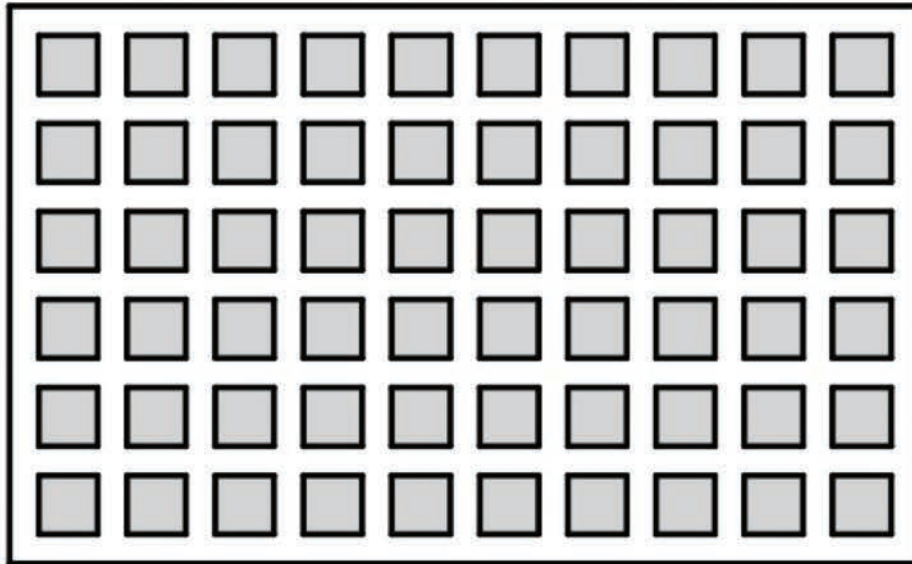
What fraction of the whole school garden will be planted with carrots? 1/20

Show your work.

1/3 of 3/20 is 1/20

T4

The response shows an understanding of multiplying fractions as the partitioning of one fraction by another, as $\frac{1}{3}$ of $\frac{1}{20}$ is found. The response shows a conceptual understanding of the question by recognizing the relationship between the amount of the garden Grade 4 has and how much it will use for the purpose of planting carrots.



- 5 This year, Grades 3, 4, and 5 will plant $\frac{9}{20}$ of the school garden altogether. Next year they will gain $\frac{1}{10}$ more of the school garden because they will have more students, while the lower grades will have fewer students.

What fraction of the whole school garden will be used by Grades 3, 4, and 5 next year?

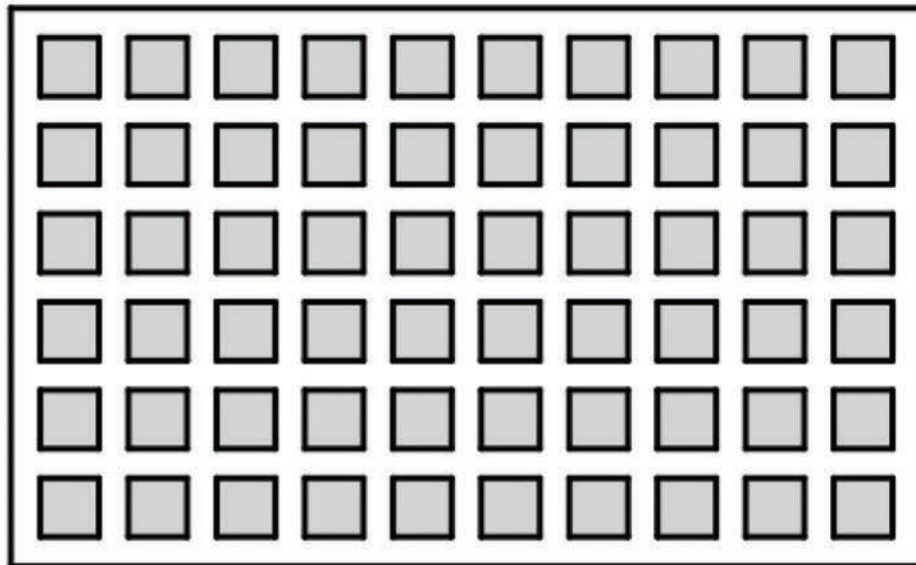
11/20

Use estimation to explain why your answer is reasonable.

I think grades 3, 4, and 5 will have 11/20 of the garden next year because half of 20 is 10 and $\frac{1}{10} = \frac{2}{20}$ which is more than $\frac{1}{20}$ so when I add $\frac{9}{20}$ and $\frac{1}{20}$ it will be more than $\frac{1}{2}$.

T5

The response shows an understanding of how to solve word problems involving addition of fractions referring to the same whole and with unlike denominators. The response shows a correct process for using the benchmark fraction of $\frac{1}{2}$ in estimating the reasonableness of the answer.



- 6 Kindergarten and Grade 1 have 16 plots altogether. There are 3 parent helpers that equally share responsibility for the Kindergarten and Grade 1 section.

How many plots is each parent responsible for if they share the plots equally?

5 $\frac{1}{3}$ plots

Show your work.

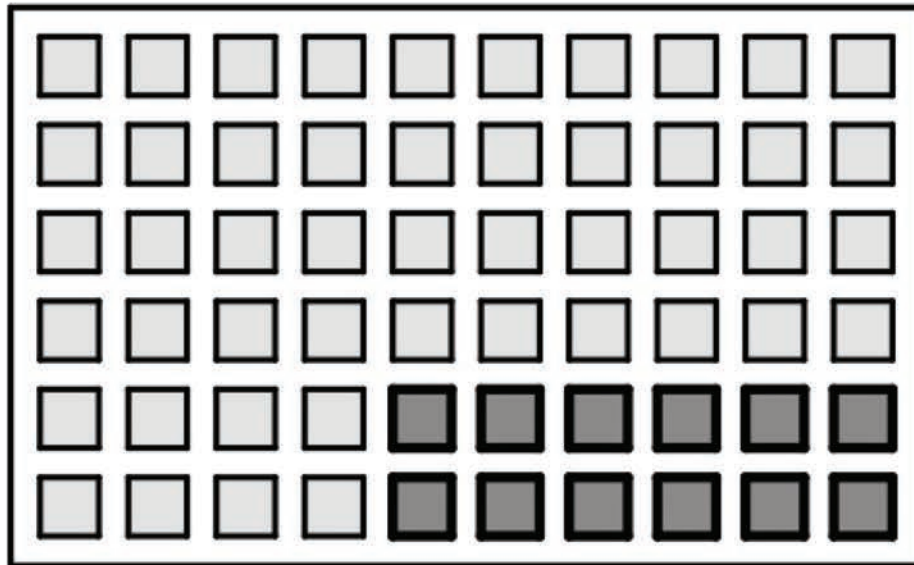
$$16 \div 3 = 5 \text{ R}1$$

$$1 \div 3 = \frac{1}{3}$$

$$5 + \frac{1}{3} = 5 \frac{1}{3}$$

T6

The response shows a correct process for solving a word problem involving division of whole numbers leading to answers in the form of mixed numbers by using equations to represent the problem. There is an understanding of the strategic use of division in solving for the number of plants demonstrated in the response. There is also conceptual understanding of a mixed number being the sum of a whole number and a fraction shown in the response, as well as the relationship of the remainder and a divisor when calculating a quotient.



- 7 Grade 5 will use 12 plots of the school garden. Each Grade 5 student will plant $\frac{1}{6}$ of a plot.

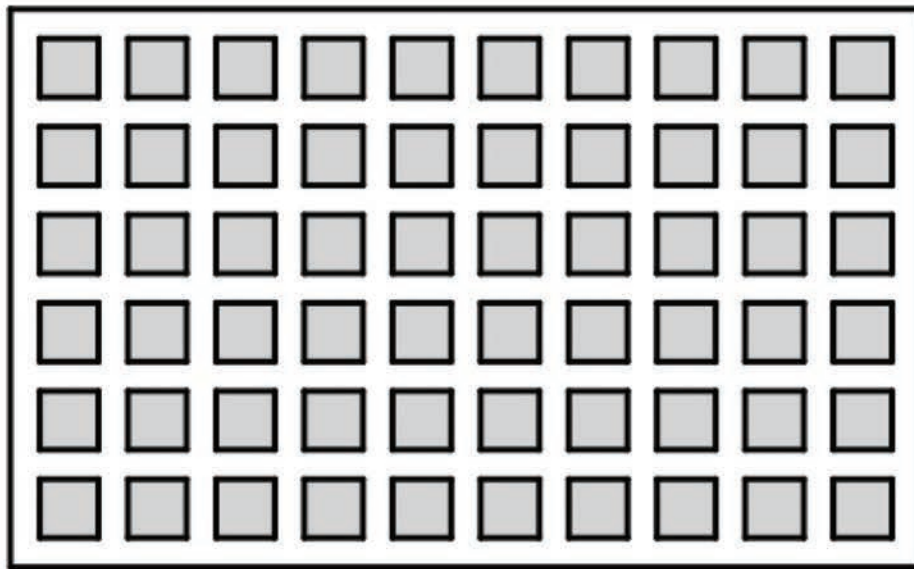
How many students are in Grade 5? 72 students

Show your work.

$$12 \text{ plots} \div \frac{1}{6} \text{ plots/student} = 72 \text{ students}$$

T7

The response shows a correct process for solving a word problem involving interpreting division of a whole number by a unit fraction and computing such a quotient. The response demonstrates an understanding of the strategic use of division in order to partition 12 plots equally amongst the Grade 5 students.



- 8 After all the grades planted their plots, they realized that $\frac{1}{30}$ of the garden didn't have anyone to plant in it. They decided to donate the $\frac{1}{30}$ of the whole garden to the two school secretaries. The two school secretaries will share this part equally to grow flowers for the office.

What fraction of the whole school garden does each secretary use? 1/60

Show your work.

$$\frac{1}{30} \div 2 = \frac{1}{60} \text{ per secretary}$$



T8

The response demonstrates a correct process for solving a word problem involving interpreting division of a unit fraction by a whole number and computing such quotients. The response shows an understanding of the partitioning of a fractional area into two equal areas using division.

Sample A - Anchor Paper Commentary

Subject/Course: Math

Task Title: School Garden

Grade Level: 5

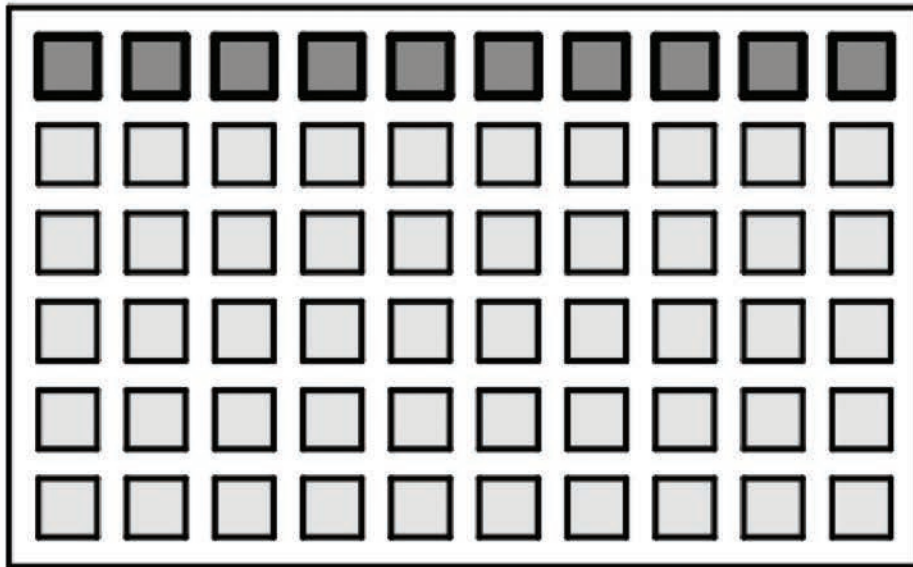
Year: 2015-2016

Rubric Traits	Anchor Score	Commentary/Rationale	Maximum Score
T1 Trait 1	1	A correct answer of $1/6$ is given.	1
T2 Trait 2	2	A correct answer of $2/24$ is given, and a correct process is shown, converting each fraction to 24ths before subtracting.	2
T3 Trait 3	2	A correct answer of $35/100$ is given, and a correct process is shown, converting each fraction to decimal form before adding, then converting the total back to a fraction.	2
T4 Trait 4	2	A correct answer of $1/20$ is given, and a correct process for finding the fraction of the garden that will grow carrots is shown.	2
T5 Trait 5	2	A correct answer of $11/20$ is given. A correct explanation using estimation is given by $1/10 = 2/20$ and $1/20 < 2/20$, which leads to $9/20 + 2/20 > 1/2$.	2
T6 Trait 6	2	A correct answer of $5 \frac{1}{3}$ plots is given, and a correct process is shown, given by $16 \div 3 = 5 \text{ R}1$ and $1 \div 3 = 1/3$, which leads to $5 + 1/3 = 5 \frac{1}{3}$.	2
T7 Trait 7	2	The correct answer of 72 students is given, and a correct process is shown, given by $12 \div 1/6 = 72$.	2
T8 Trait 8	2	The correct answer of $1/60$ is given, and a correct process is shown by $1/30 \div 2 = 1/60$.	2

Score = 15/15, Level 4: Exceeding Standards

School Garden

ABC Elementary School has grades Kindergarten through 5. They are starting a school garden that is made up of rows of equal-sized plots with room to walk in between. Each grade gets a fraction of the garden based on the number of students in that grade. The more students a grade has, the more of the garden the grade can use for planting. The garden is shown below:

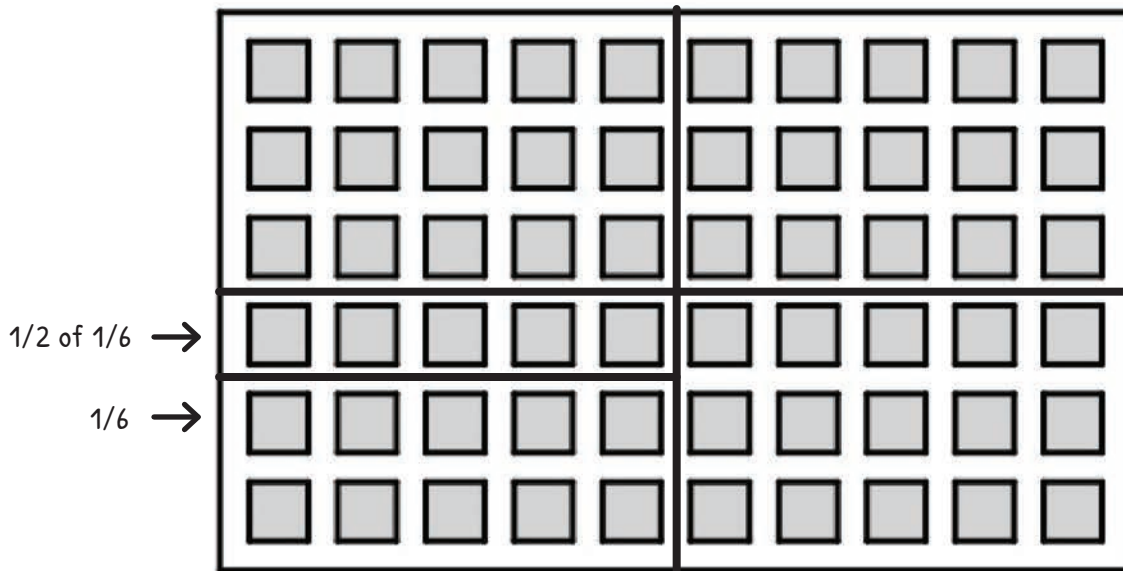


- 1 Grade 1 will plant in the top row of the school garden.

What fraction of the whole school garden does Grade 1 use? 10/60

T1

The response shows understanding that a fraction a/b is represented by the quantity formed by a parts of size $1/b$; in particular, the relationship between the number of plots in the garden, b , and each plot, a .



- 2 Grade 2 will plant $\frac{1}{4}$ of the whole school garden. So far they have planted $\frac{1}{6}$ of the whole school garden.

What fraction of the whole school garden still needs to be planted by Grade 2?

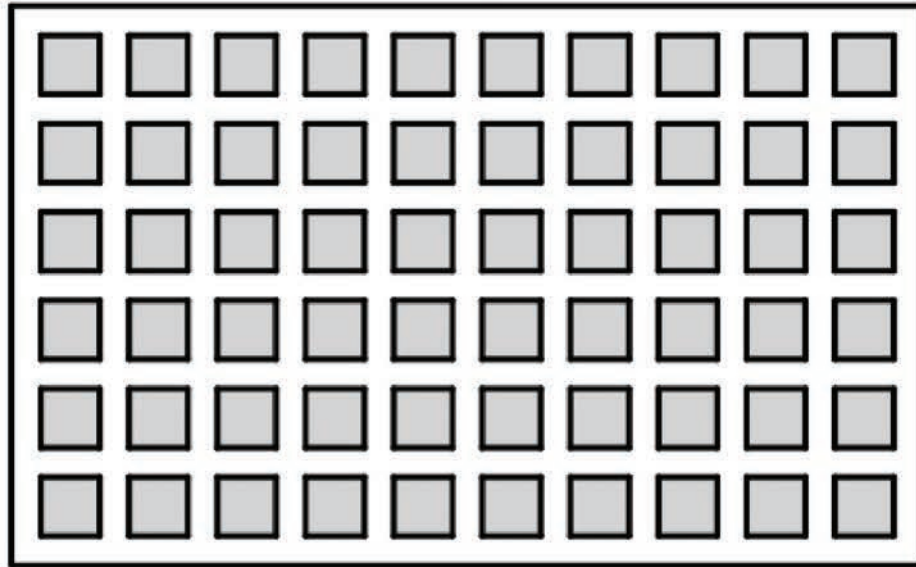
1/12

Show your work.

1/2 of 1/6 is 1/12

T2

The response shows a correct process for subtracting fractions with unlike denominators, using a visual model to show a common denominator of 60 or as fractions from the same whole. One fourth of 60 is shown, and one sixth of 60 is shown. The remaining area is one twelfth of 60. The response also shows an understanding that half of a fraction is found by doubling the denominator, as 1/12 is identified as half of 1/6.



- 3 Later in the school year, Grades 2 and 3 will combine their sections to grow watermelon for the Spring Festival. Grade 2 will plant $\frac{1}{4}$ of the whole school garden and Grade 3 will plant $\frac{1}{10}$ of the whole school garden.

What fraction of the whole school garden will be used in the spring to grow watermelon?

$\frac{14}{40}$

Show your work.

$$\frac{1}{10} = \frac{4}{40}$$

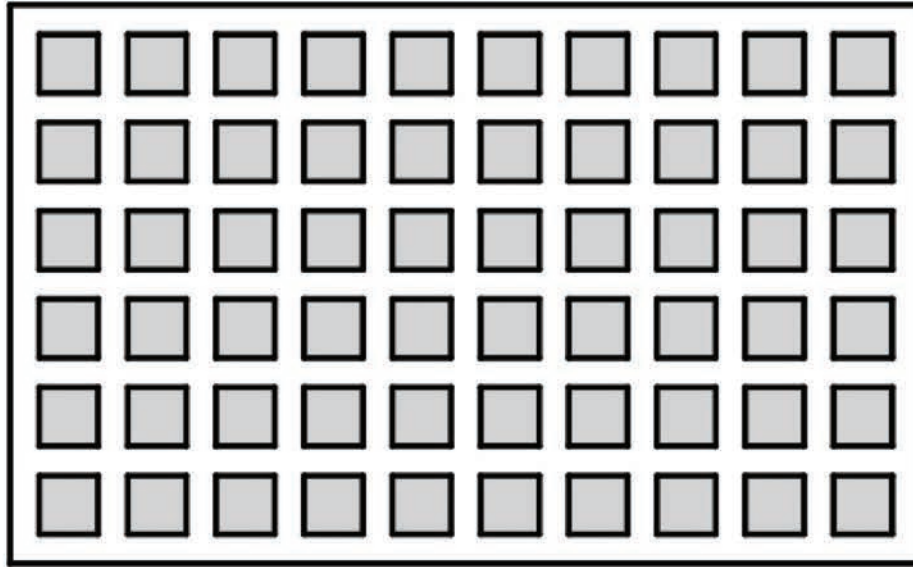
$$\frac{1}{4} = \frac{10}{40}$$

$$4 \times 10 = 40$$

$$\frac{4}{40} + \frac{10}{40} = \frac{14}{40}$$

T3

The response shows a correct process for adding fractions with unlike denominators, replacing each with equivalent fractions to find a result with like denominators. There is an understanding of the strategic use of fraction addition shown in the response.



- 4 Grade 4 will plant $\frac{3}{20}$ of the whole school garden. They will use $\frac{1}{3}$ of their plot to plant carrots.

What fraction of the whole school garden will be planted with carrots? $\frac{1}{30}$

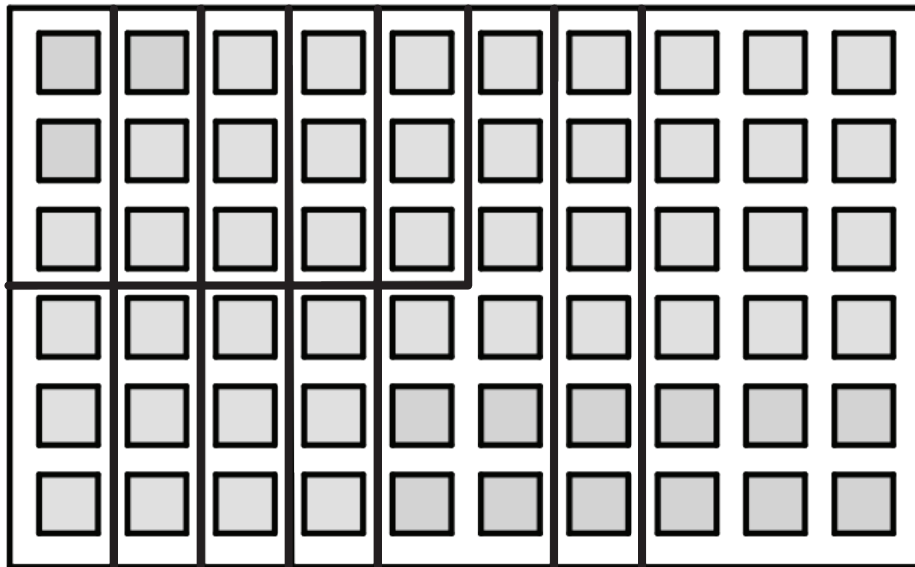
Show your work.

$$\frac{1}{3} \times \frac{3}{20} = \frac{3}{60}$$

$$\frac{3}{60} = \frac{1}{20}$$

T4

The response shows a correct process for multiplying fractions as partitioning, showing $\frac{1}{3}$ of a group of $\frac{3}{20}$. There is a misconception when trying to find a common factor for the purposes of expressing the fraction in lowest terms.



- 5 This year, Grades 3, 4, and 5 will plant $\frac{9}{20}$ of the school garden altogether. Next year they will gain $\frac{1}{10}$ more of the school garden because they will have more students, while the lower grades will have fewer students.

What fraction of the whole school garden will be used by Grades 3, 4, and 5 next year?

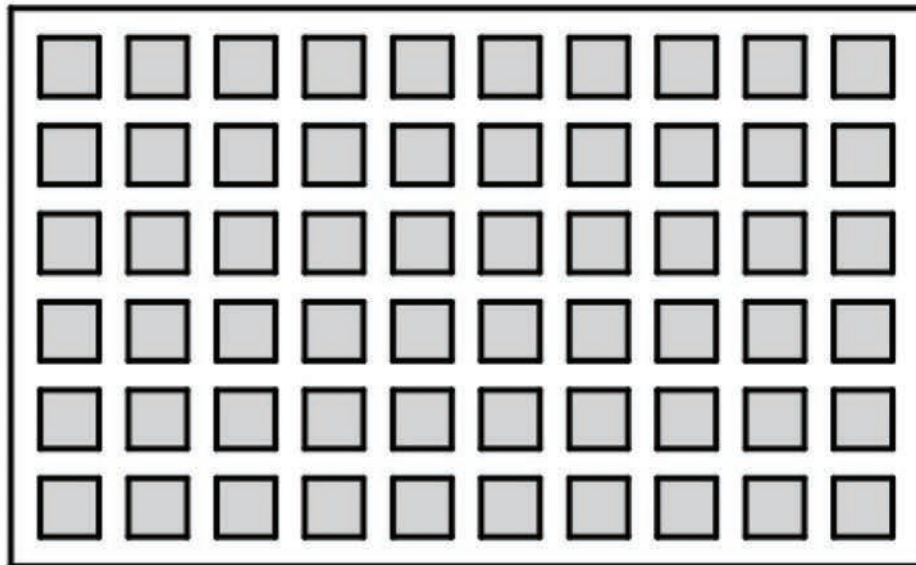
33/60

Use estimation to explain why your answer is reasonable.

Three of the plots is $\frac{1}{20}$ because a whole column is $\frac{1}{10}$ (there are 10 columns). So, there are 9 groups of 3 ($\frac{9}{20}$) and 1 group of 6 ($\frac{1}{10}$). This makes 33 plots out of 60.

T5

The response shows a correct process for solving a word problem involving addition of fractions referring to the same whole and with unlike denominators, using a visual model to represent the problem. The response demonstrates an understanding of equivalent fractions in assessing the reasonableness of an answer. The response does not demonstrate an understanding of estimation.



- 6 Kindergarten and Grade 1 have 16 plots altogether. There are 3 parent helpers that equally share responsibility for the Kindergarten and Grade 1 section.

How many plots is each parent responsible for if they share the plots equally?

$$5 \frac{3}{10}$$

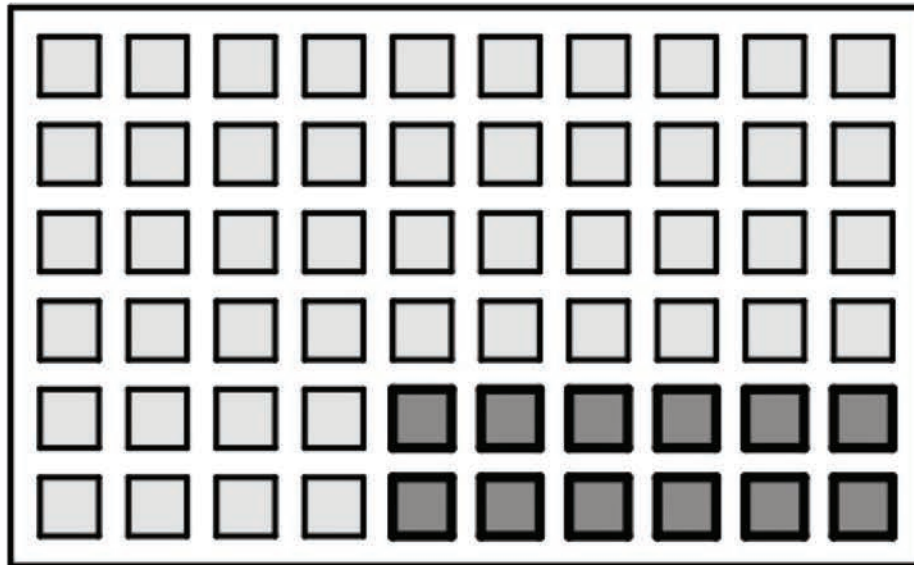
plots

T6

The response shows an understanding of solving word problems involving division of whole numbers, leading to answers in the form of mixed numbers by using equations to represent the problem. There is a misconception shown in converting the decimal remainder 0.33 to a fraction.

Show your work.

$$\begin{array}{r} 5.33 \\ 3 \overline{)16} \\ \underline{-15} \\ 10 \\ \underline{-9} \\ 10 \\ \underline{-9} \end{array}$$



- 7 Grade 5 will use 12 plots of the school garden. Each Grade 5 student will plant $\frac{1}{6}$ of a plot.

How many students are in Grade 5? 72 students

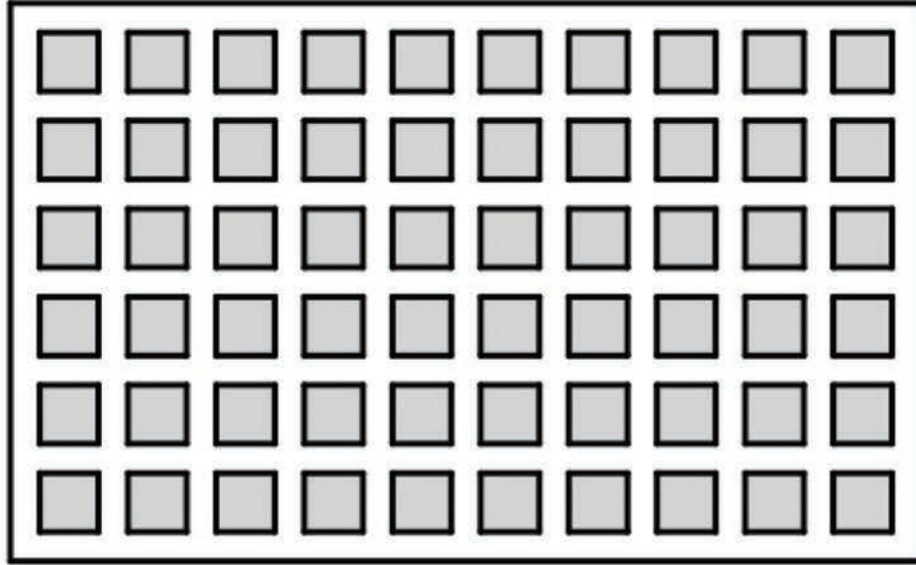
Show your work.

1 plot = 6 students

$$6 \times 12 = 72$$

T7

The response shows a correct process for solving a word problem involving interpreting division of a whole number by a unit fraction and computing such quotients. The response uses a multiplication equation to calculate the quotient, showing understanding that dividing by $\frac{1}{6}$ is the same as multiplying by 6.



- 8 After all the grades planted their plots, they realized that $\frac{1}{30}$ of the garden didn't have anyone to plant in it. They decided to donate the $\frac{1}{30}$ of the whole garden to the two school secretaries. The two school secretaries will share this part equally to grow flowers for the office.

What fraction of the whole school garden does each secretary use? 1/15

Show your work.

$$\frac{1}{30} / 2 = 1/15$$



T8

The response shows an incorrect process for solving a word problem involving interpreting division of unit fraction by a whole number and computing such quotients. The response demonstrates a conceptual error regarding division and interprets the context of the trait as 2 groups of size $1/30$ instead of finding the number of ways 2 fits inside of $1/30$.

Sample B - Anchor Paper Commentary

Subject/Course: Math

Task Title: School Garden

Grade Level: 5

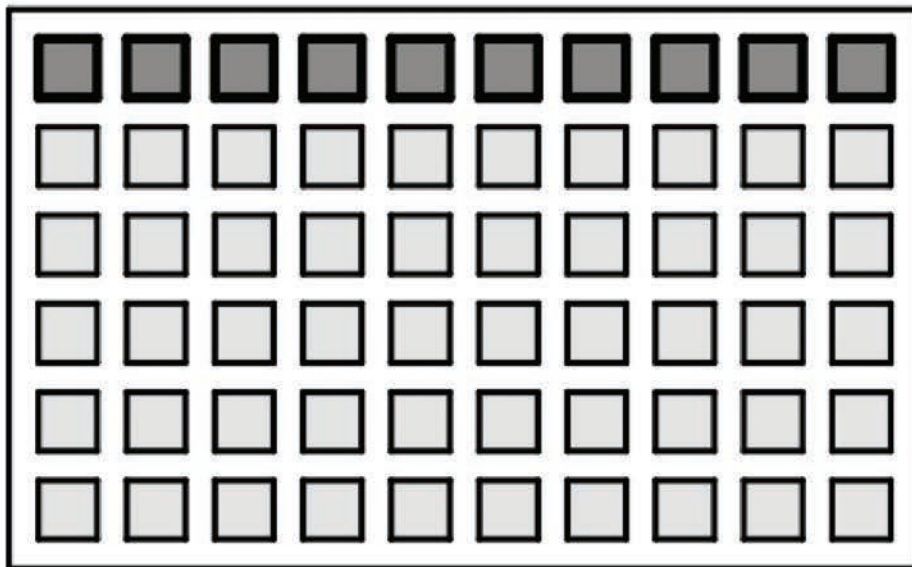
Year: 2015-2016

Rubric Traits	Anchor Score	Commentary/Rationale	Maximum Score
T1 Trait 1	1	A correct answer of $10/60$ is given.	1
T2 Trait 2	2	A correct answer of $1/12$ is given, and a correct process is shown, using the drawing to identify each fraction as a part of the whole.	2
T3 Trait 3	2	A correct answer of $14/40$ is given, and a correct process is shown, given by $1/10 = 4/40$ and $1/4 = 10/40$, which lead to $4/40 + 10/40 = 14/40$.	2
T4 Trait 4	1	An incorrect answer of $1/30$ is given. A correct process is given by $1/3 \times 3/20 = 3/60$. A computational error in reducing $3/60$ leads to an incorrect answer.	2
T5 Trait 5	1	A correct answer of $33/60$ is given. Fractional equivalence is used to explain the reasonableness of the answer.	2
T6 Trait 6	1	An incorrect answer of $5 \frac{3}{10}$ is given. A correct process is shown, although the decimal value $0.\overline{33}$ is incorrectly converted to $3/10$.	2
T7 Trait 7	2	The correct answer of 72 students is given, and a correct process is shown, given by $6 \times 12 = 72$.	2
T8 Trait 8	0	An incorrect answer of $1/15$ is given, and an incorrect process is shown.	2

Score = 10/15, Level 3: Meeting Standards

School Garden

ABC Elementary School has grades Kindergarten through 5. They are starting a school garden that is made up of rows of equal-sized plots with room to walk in between. Each grade gets a fraction of the garden based on the number of students in that grade. The more students a grade has, the more of the garden the grade can use for planting. The garden is shown below:

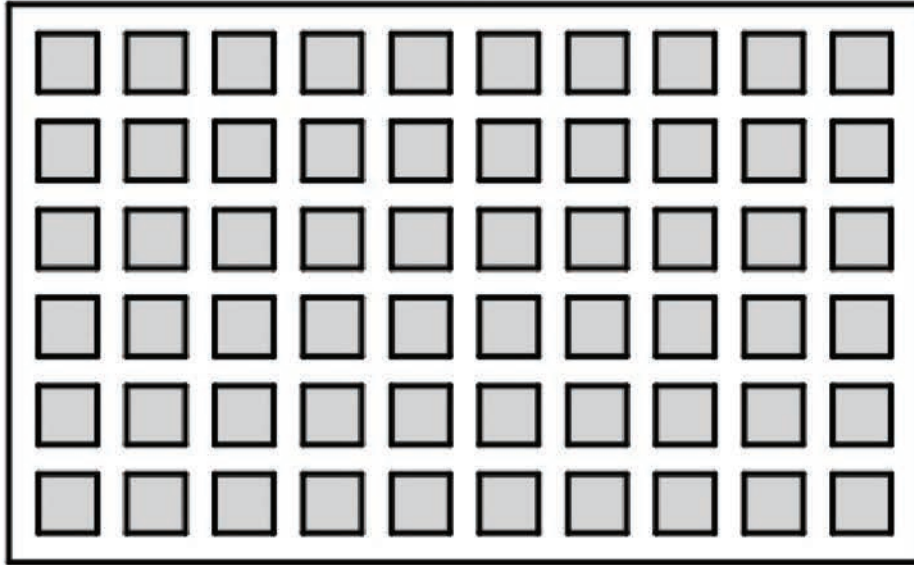


- 1 Grade 1 will plant in the top row of the school garden.

What fraction of the whole school garden does Grade 1 use? $\frac{6}{10}$

T1

The response shows a misconception regarding the quantity formed by a parts of $1/b$. The response may show a misconception regarding the rows and columns shown in the diagram and interpreting the fact that Grade 1 will plant the top row to mean the number of plots in each column.



- 2 Grade 2 will plant $\frac{1}{4}$ of the whole school garden. So far they have planted $\frac{1}{6}$ of the whole school garden.

What fraction of the whole school garden still needs to be planted by Grade 2?

1/12

Show your work.

T2

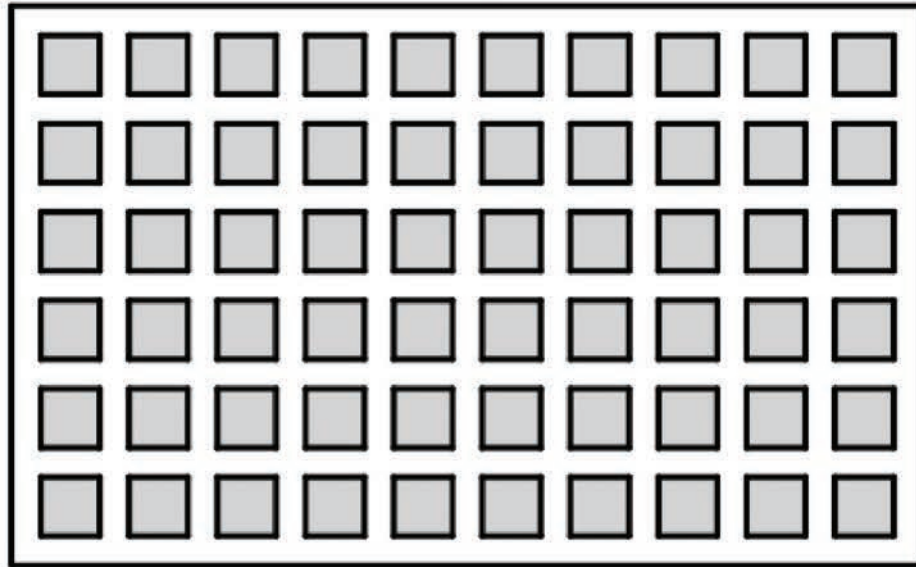
The response shows a correct process for subtracting fractions with unlike denominators by comparing each fraction to the whole and using a common denominator of 60. The response also shows an understanding of division as partitioning a whole into equal-sized parts ($\frac{1}{4}$ of 60 is shown as $60 \div 4$), as each fraction is identified as an amount out of 60. The difference of 5 is found, which is multiplied by 12 to show that it is $\frac{1}{12}$ of 60.

$$60 \div 4 = 15$$

$$60 \div 6 = 10$$

$$15 - 10 = 5$$

$$5 \times 12 = 60$$



- 3 Later in the school year, Grades 2 and 3 will combine their sections to grow watermelon for the Spring Festival. Grade 2 will plant $\frac{1}{4}$ of the whole school garden and Grade 3 will plant $\frac{1}{10}$ of the whole school garden.

What fraction of the whole school garden will be used in the spring to grow watermelon?

$$\frac{21}{60}$$

Show your work.

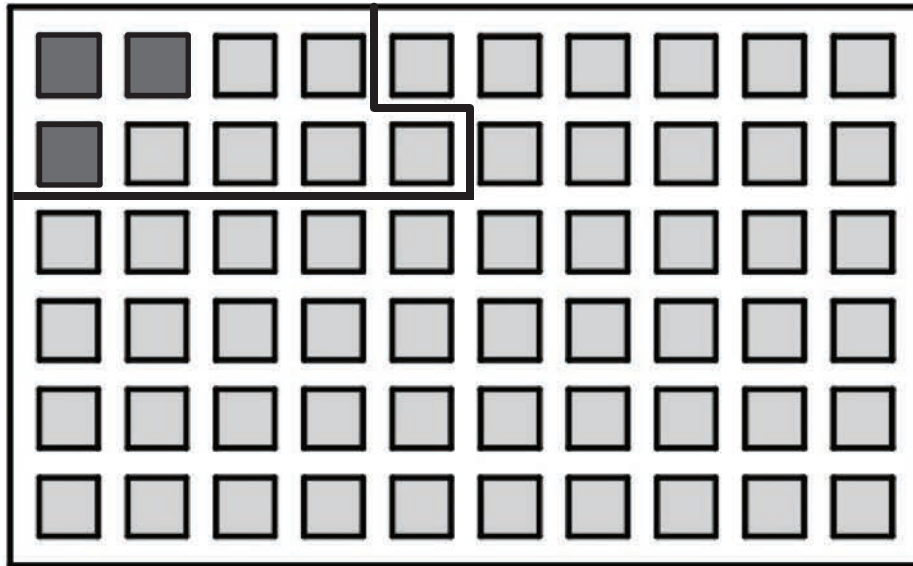
$$60 \div 4 = 15$$

$$60 \div 10 = 6$$

$$15 + 6 = 21$$

T3

The response shows a correct process for adding fractions with unlike denominators by comparing each fraction to the whole and using a common denominator of 60. The response also shows an understanding of fractional equivalence by demonstrating the number fourths and tenths inside of sixtieths.



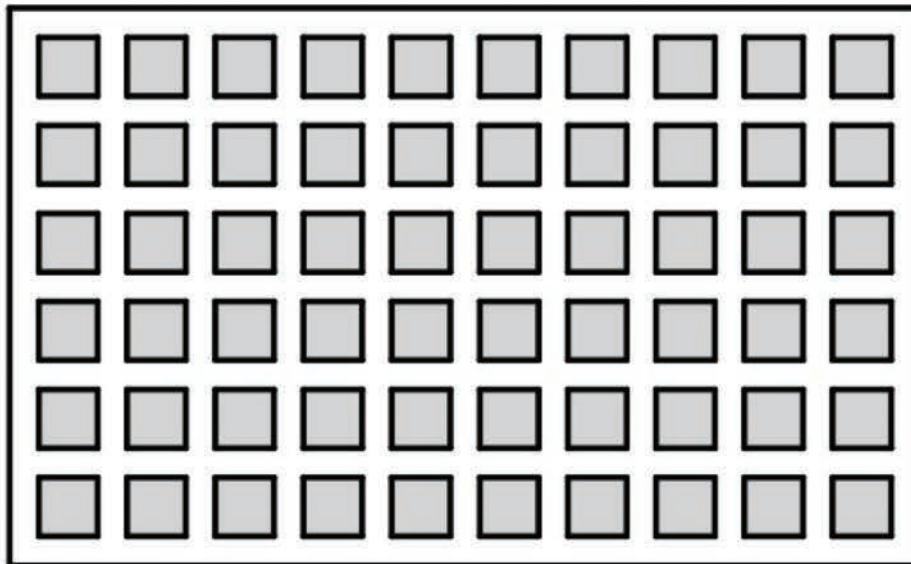
- 4 Grade 4 will plant $\frac{3}{20}$ of the whole school garden. They will use $\frac{1}{3}$ of their plot to plant carrots.

What fraction of the whole school garden will be planted with carrots? $\frac{3}{60}$

Show your work.

T4

The response shows a correct process for multiplying fractions by partitioning. The response demonstrates an understanding of partitioning a fractional area of the whole into a smaller fractional area that is compared to the whole.



- 5 This year, Grades 3, 4, and 5 will plant $\frac{9}{20}$ of the school garden altogether. Next year they will gain $\frac{1}{10}$ more of the school garden because they will have more students, while the lower grades will have fewer students.

What fraction of the whole school garden will be used by Grades 3, 4, and 5 next year?

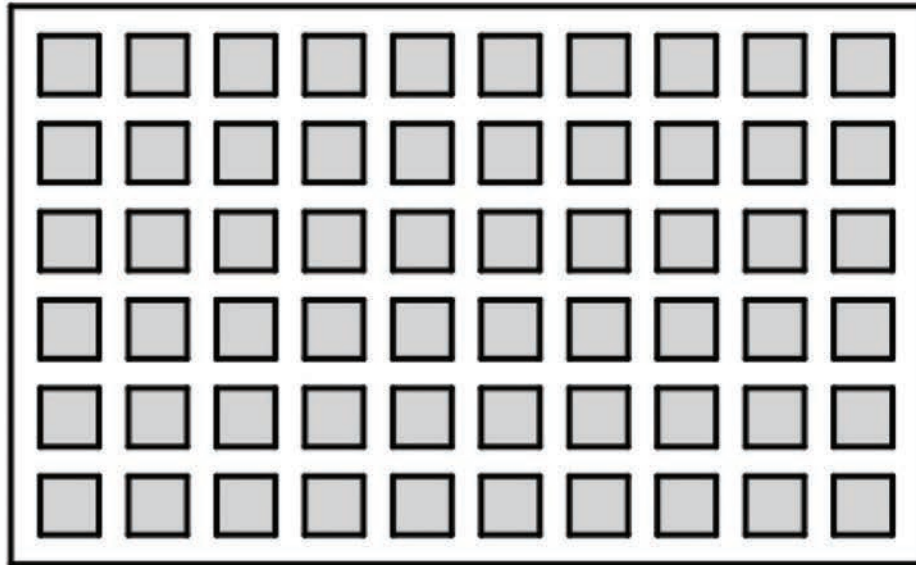
6/10

Use estimation to explain why your answer is reasonable.

They will use about 6/10 of the garden next year because $\frac{9}{20}$ is about $\frac{1}{2}$, or $\frac{5}{10}$ and $\frac{5}{10} + \frac{1}{10} = \frac{6}{10}$.

T5

The response shows a correct process for using estimation, specifically benchmark fractions to assess the reasonableness of an answer. It is clear from the response that a lack of precision in estimating $\frac{9}{20}$ in terms of tenths leads to an incorrect answer.



- 6 Kindergarten and Grade 1 have 16 plots altogether. There are 3 parent helpers that equally share responsibility for the Kindergarten and Grade 1 section.

How many plots is each parent responsible for if they share the plots equally?

$$5 \frac{1}{2}$$

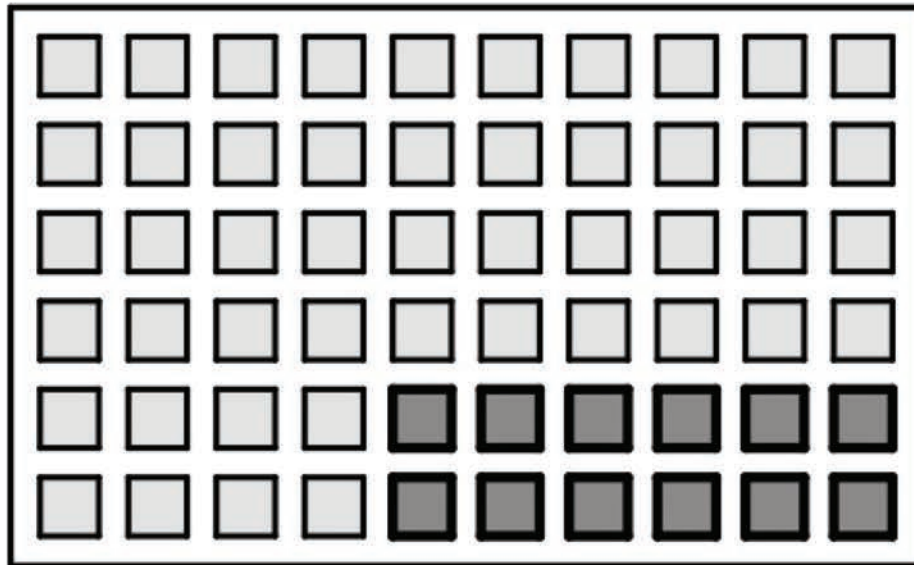
plots

T6

The response shows some understanding of solving word problems involving division of whole numbers, leading to answers in the form of mixed numbers by using equations to represent the problem. However, errors are shown in the division, leading to an incorrect result.

Show your work.

$$\begin{array}{r} 5.5 \\ 3 \overline{)16} \end{array} = 5 \frac{1}{2}$$



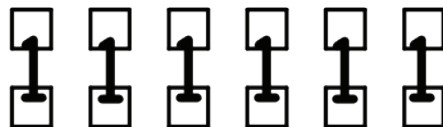
- 7 Grade 5 will use 12 plots of the school garden. Each Grade 5 student will plant $\frac{1}{6}$ of a plot.

How many students are in Grade 5? 6 students

Show your work.

because each student will plant $\frac{1}{6}$ of the plot.

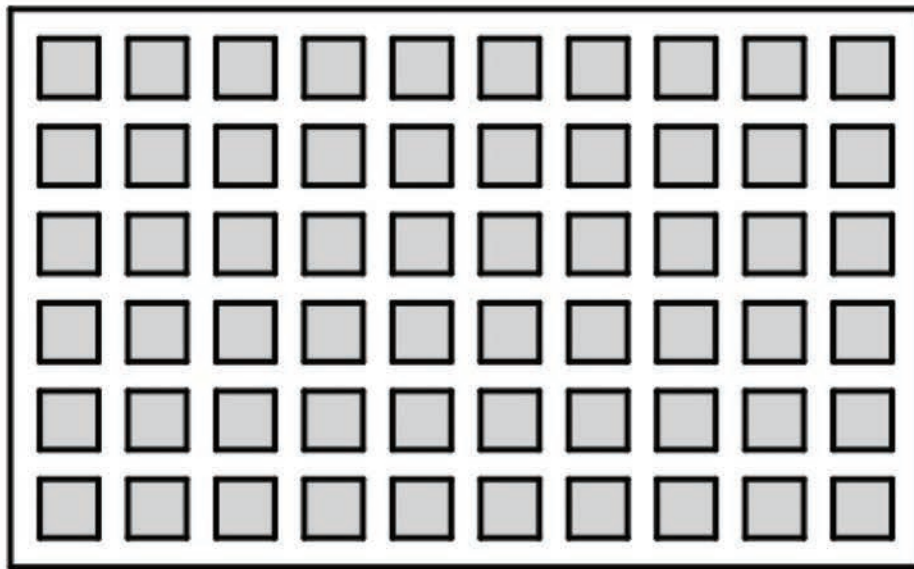
$$\frac{12}{1} \times \frac{1}{6} = 2$$



area = 12

T7

This response shows a misconception about dividing a whole number by a unit fraction. From the language used in the response, the phrase "Each Grade 5 student will plant $\frac{1}{6}$ of a plot" was misread as "Each Grade 5 student will plant $\frac{1}{6}$ of the plot," demonstrating that the word "plot" was misinterpreted to be the Grade 5 area of 12 plots.



- 8 After all the grades planted their plots, they realized that $\frac{1}{30}$ of the garden didn't have anyone to plant in it. They decided to donate the $\frac{1}{30}$ of the whole garden to the two school secretaries. The two school secretaries will share this part equally to grow flowers for the office.

What fraction of the whole school garden does each secretary use? 1/65

Show your work.

$$\frac{1}{30} = \frac{2}{60}$$

$$\frac{2}{60} \div 2 = \frac{2}{130}$$

$$\frac{2}{130} = \frac{1}{65}$$



T8

The response shows a correct process for solving a word problem involving interpreting division of a unit fraction by a whole number and computing such quotients. The response demonstrates a computational error in dividing $2/60$ by 2, which leads to an incorrect answer. There is an understanding of fractional equivalence shown in the response.

Sample C - Anchor Paper Commentary

Subject/Course: Math

Task Title: School Garden

Grade Level: 5

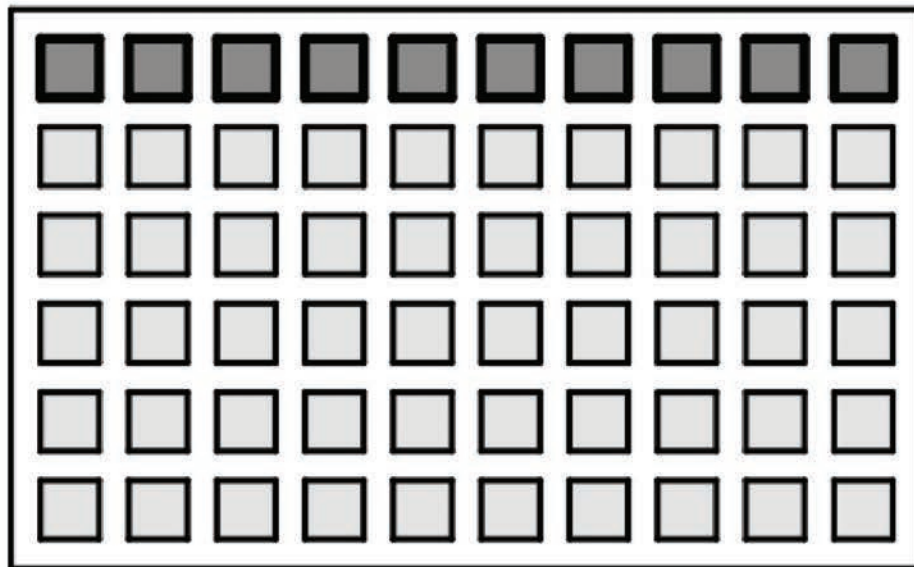
Year: 2015-2016

Rubric Traits	Anchor Score	Commentary/Rationale	Maximum Score
T1 Trait 1	0	An incorrect answer of 6/10 is given.	1
T2 Trait 2	2	A correct answer of 2/24 is given, and a correct process is shown, finding the number of plots out of 60 for both fractions and converting the resulting 5 plots to a fraction of the whole.	2
T3 Trait 3	2	A correct answer of 21/60 is given, and a correct process is shown, finding the number of plots out of 60 for both fractions and converting the resulting 5 plots to a fraction of the whole.	2
T4 Trait 4	2	A correct answer of 3/60 is given, and a correct process for finding the fraction of the garden that will grow carrots is shown using the drawing ($3/20 \times 1/3$ is modeled).	2
T5 Trait 5	1	An incorrect answer of 6/10 is given. A correct explanation using estimation to explain the reasonableness of the answer is given.	2
T6 Trait 6	0	An incorrect answer of $5 \frac{1}{2}$ is given. The process shown, $16 \div 3 = 5.5 = 5 \frac{1}{2}$ is not enough to be considered the beginning of a correct process, since no computations are shown aside from the incorrect quotient.	2
T7 Trait 7	0	An incorrect answer of 6 is given, and an incorrect process is shown, given by $12/1 \times 1/6 = 2$	2
T8 Trait 8	1	An incorrect answer is given by 1/65. A correct process is shown but a computational error, given by $2/60 \div 2 = 2/130$ leads to an incorrect answer.	2

Score = 8/15, Level 3: Meeting Standards

School Garden

ABC Elementary School has grades Kindergarten through 5. They are starting a school garden that is made up of rows of equal-sized plots with room to walk in between. Each grade gets a fraction of the garden based on the number of students in that grade. The more students a grade has, the more of the garden the grade can use for planting. The garden is shown below:

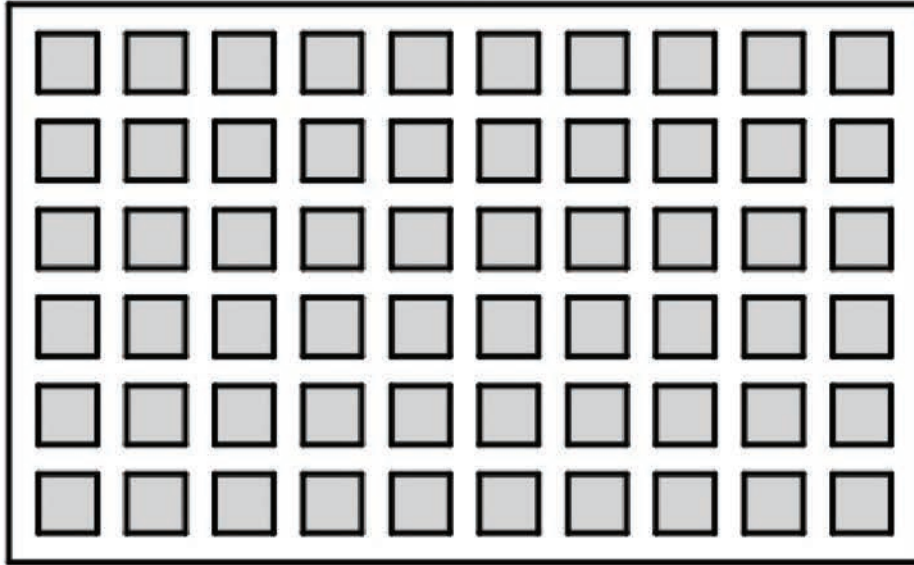


- 1 Grade 1 will plant in the top row of the school garden.

What fraction of the whole school garden does Grade 1 use? $\frac{1}{5}$

T1

The response shows a misconception regarding how a fraction is represented. Since one row is shaded and five rows are unshaded the response of $\frac{1}{5}$ may imply that there is a misconception with regard to what the whole is.



- 2 Grade 2 will plant $\frac{1}{4}$ of the whole school garden. So far they have planted $\frac{1}{6}$ of the whole school garden.

What fraction of the whole school garden still needs to be planted by Grade 2?

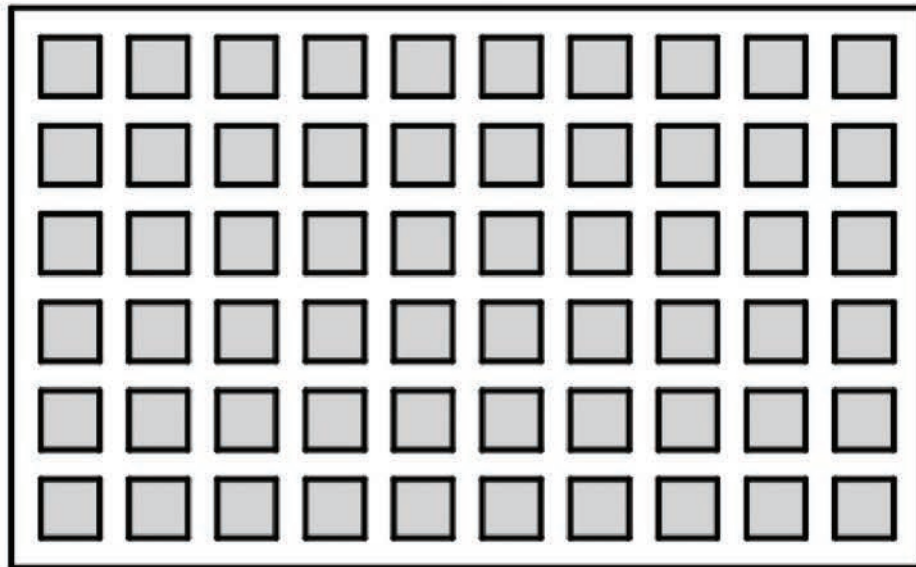
5/12

Show your work.

$$\frac{1}{4} \times \frac{3}{3} + \frac{1}{6} \times \frac{2}{2} = \frac{5}{12}$$

T2

The response shows a correct process for adding fractions with unlike denominators, replacing each with equivalent fractions to find a result with like denominators. The response also shows some misunderstanding of the problem situation, as the fractions should have been subtracted.



- 3 Later in the school year, Grades 2 and 3 will combine their sections to grow watermelon for the Spring Festival. Grade 2 will plant $\frac{1}{4}$ of the whole school garden and Grade 3 will plant $\frac{1}{10}$ of the whole school garden.

What fraction of the whole school garden will be used in the spring to grow watermelon?

8/20

T3

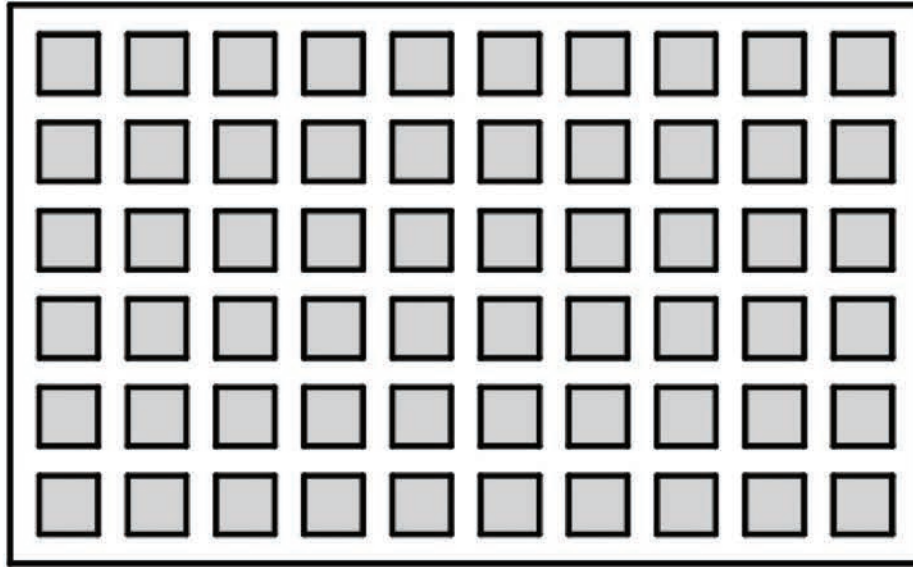
The response shows a correct process for adding fractions with unlike denominators by comparing each fraction to the whole and using a common denominator of 20. The process used to find the equivalent fraction shows a computational error in converting $\frac{1}{4}$ to an equivalent fraction with a denominator of 20.

Show your work.

$$\frac{1}{4} \text{ is } \frac{6}{20}$$

$$\frac{1}{10} \text{ is } \frac{2}{20}$$

$$\frac{6}{20} + \frac{2}{20} \text{ is } \frac{8}{20}$$



- 4 Grade 4 will plant $\frac{3}{20}$ of the whole school garden. They will use $\frac{1}{3}$ of their plot to plant carrots.

What fraction of the whole school garden will be planted with carrots? $\frac{1}{20}$

Show your work.

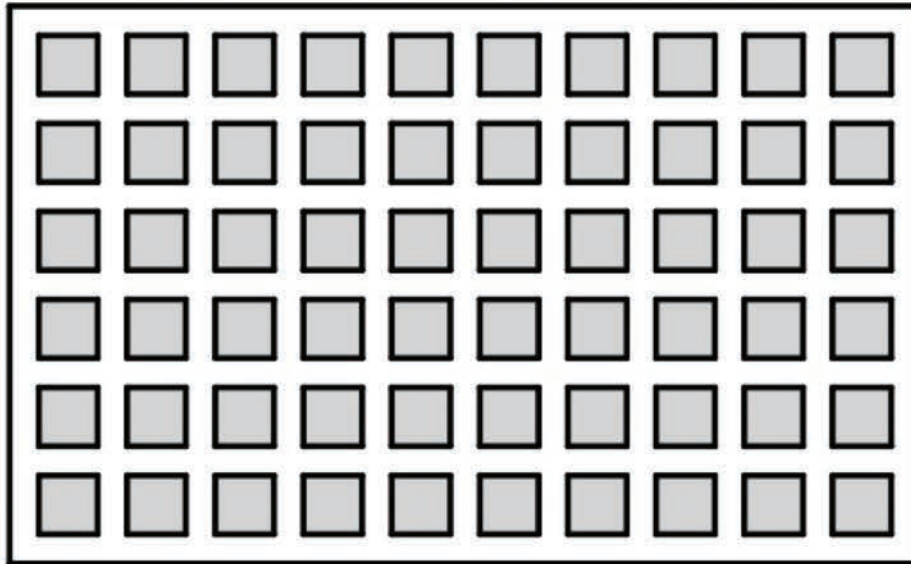
$$\frac{1}{3} \quad \frac{1}{3} \quad \frac{1}{3}$$

$$\frac{1}{20} + \frac{1}{20} + \frac{1}{20} =$$

$$\frac{3}{20}$$

T4

The response shows a correct process for multiplying fractions as partitioning, as $\frac{3}{20}$ is shown as three groups of $\frac{1}{20}$. There is an understanding of the part-whole relationship demonstrated in the response.



- 5 This year, Grades 3, 4, and 5 will plant $\frac{9}{20}$ of the school garden altogether. Next year they will gain $\frac{1}{10}$ more of the school garden because they will have more students, while the lower grades will have fewer students.

What fraction of the whole school garden will be used by Grades 3, 4, and 5 next year?

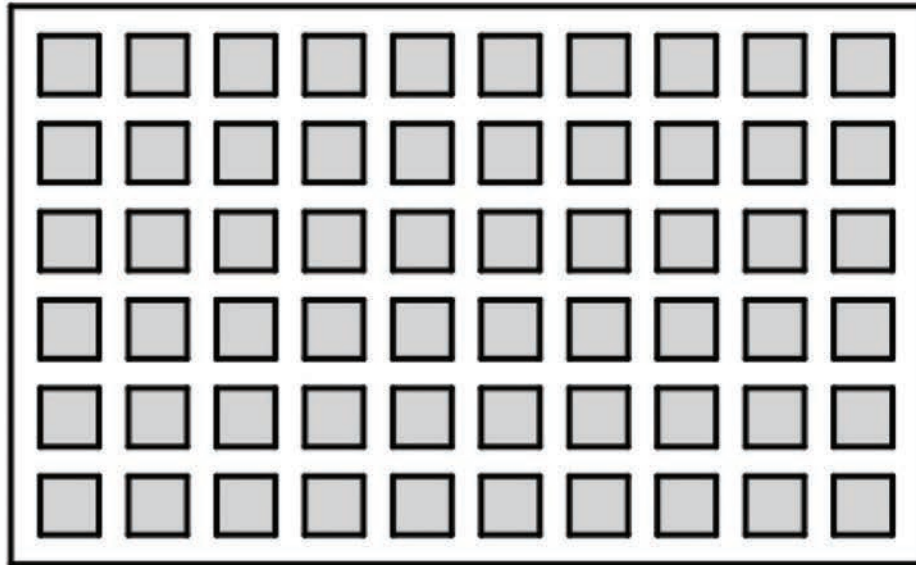
39/60

Use estimation to explain why your answer is reasonable.

Because $\frac{1}{2}$ would be 30 and that would be $\frac{10}{20}$ but $\frac{9}{20}$ would be one less but $\frac{1}{10}$ would be a little more because it is bigger than $\frac{1}{20}$.

T5

The response shows a correct process for using benchmark fractions in using estimation to mentally solve problems. The response shows an understanding that the total will be a little more than one half without using computation to support the claim. The response seems to imply that the total will be 39 out of 60 (30 parts plus a little more), but does not show evidence of understanding the addition process for fractions.



- 6 Kindergarten and Grade 1 have 16 plots altogether. There are 3 parent helpers that equally share responsibility for the Kindergarten and Grade 1 section.

How many plots is each parent responsible for if they share the plots equally?

$$6 \frac{1}{3}$$

plots

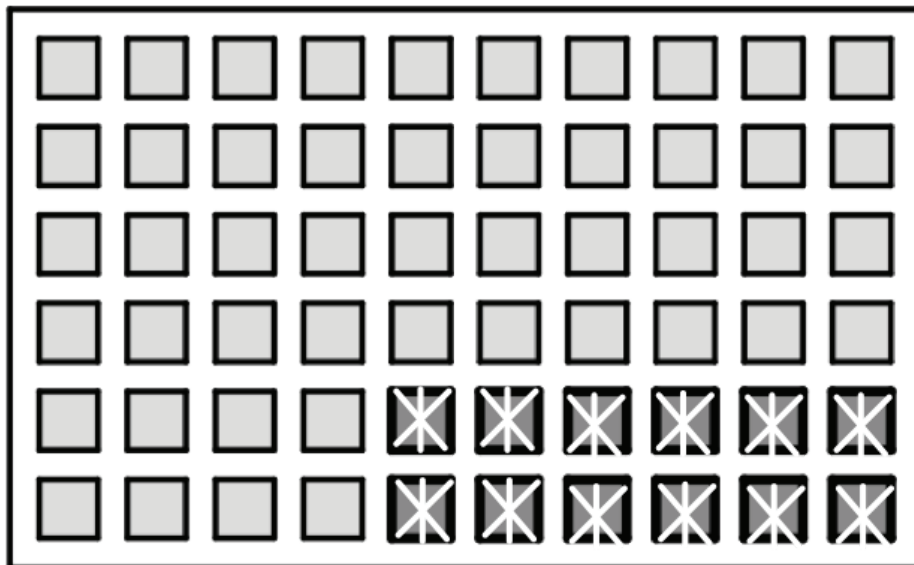
T6

The response shows a correct process for solving a word problem involving division of whole numbers leading to answers in the form of mixed numbers by using an equation to represent the problem. A computational error in computing the whole number leads to an incorrect answer. There is an understanding of expressing the quotient of two whole numbers as a mixed number shown in the response.

Show your work.

plots parents

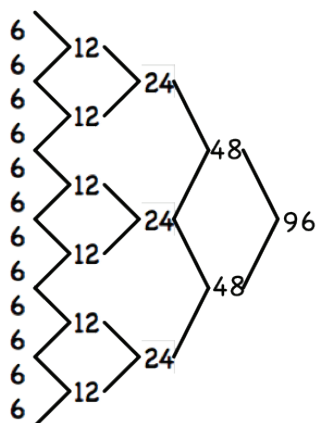
$$16 \div 3 = 6 \frac{1}{3}$$



- 7 Grade 5 will use 12 plots of the school garden. Each Grade 5 student will plant $\frac{1}{6}$ of a plot.

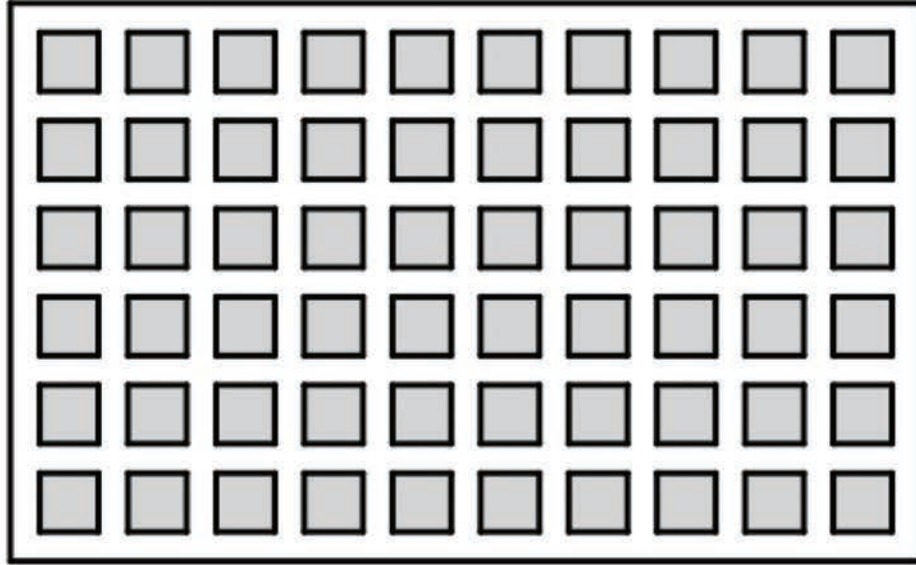
How many students are in Grade 5? 96 students

Show your work.



T7

The response shows understanding of solving word problems involving interpreting division of a whole number by a unit fraction and computing such quotients. The response uses the drawing to show that each of the 12 plots is divided into sixths, accounting for 6 students per plot (6×12). The response shows the addition of the six 12 times, and a computational error is made, adding 24 four times instead of three times.



- 8 After all the grades planted their plots, they realized that $\frac{1}{30}$ of the garden didn't have anyone to plant in it. They decided to donate the $\frac{1}{30}$ of the whole garden to the two school secretaries. The two school secretaries will share this part equally to grow flowers for the office.

What fraction of the whole school garden does each secretary use? 2/60

Show your work.

$$\frac{1}{30} \times \frac{2}{2} = \frac{2}{60}$$



T8

The response shows an incorrect process for finding the quotient of $\frac{1}{30}$ and 2. The response shows some misconceptions about solving word problems involving interpreting division of a unit fraction by a whole number and computing such quotients, since $\frac{1}{30}$ is multiplied by $(\frac{2}{2})$ rather than being divided by 2.

Sample D - Anchor Paper Commentary

Subject/Course: Math

Task Title: School Garden

Grade Level: 5

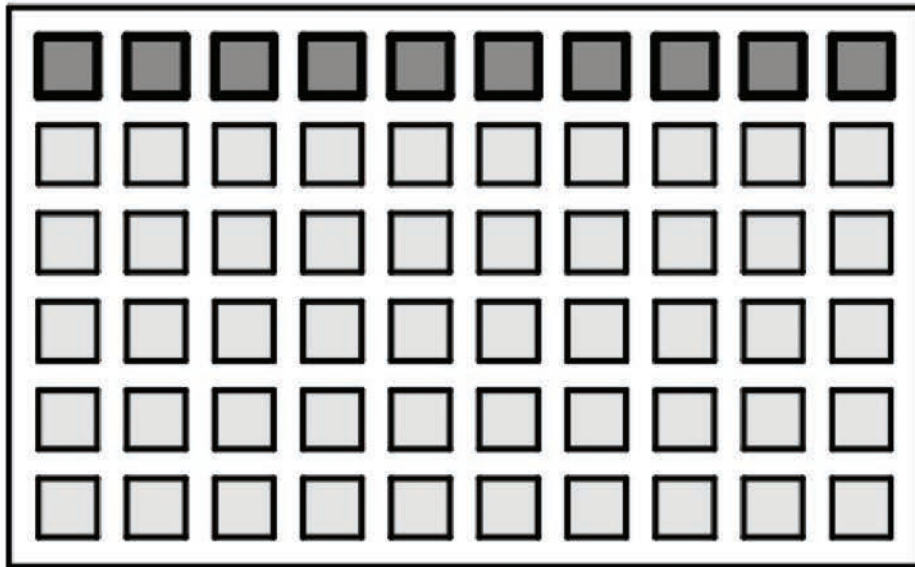
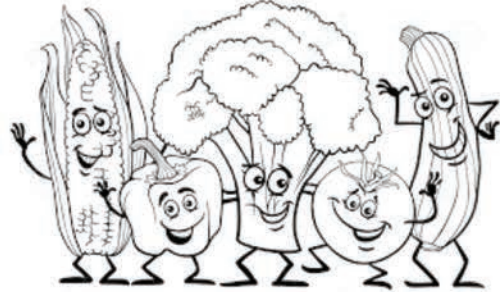
Year: 2015-2016

Rubric Traits	Anchor Score	Commentary/Rationale	Maximum Score
T1 Trait 1	0	An incorrect answer of $1/5$ is given.	1
T2 Trait 2	1	An incorrect answer of $5/12$ is given. However, a correct process for adding or subtracting fractions with unlike denominators is started, given by the conversion of both fractions to twelfths.	2
T3 Trait 3	1	An incorrect answer of $8/20$ is given. A correct process is started but a computational error given by $1/4 = 6/20$ leads to an incorrect answer.	2
T4 Trait 4	2	A correct answer of $1/20$ is given and a correct process is shown given by $1/20 + 1/20 + 1/20 = 3/20$.	2
T5 Trait 5	1	An incorrect answer of $39/60$ is given. Estimation is used correctly to explain the reasonableness of the answer using $1/2$ as the benchmark for comparison.	2
T6 Trait 6	1	An incorrect answer of $6 \frac{1}{3}$ plots is given. A correct process for finding the number of plots to be shared is given.	2
T7 Trait 7	1	An incorrect answer of 96 students is given. A correct process is used with a computational error leading to an incorrect answer.	2
T8 Trait 8	0	An incorrect answer of $2/60$ is given and an incorrect process is shown, given by $1/30 \times 2/2 = 2/60$.	2

Score = 7/15, Level 2: Approaching Standards

School Garden

ABC Elementary School has grades Kindergarten through 5. They are starting a school garden that is made up of rows of equal-sized plots with room to walk in between. Each grade gets a fraction of the garden based on the number of students in that grade. The more students a grade has, the more of the garden the grade can use for planting. The garden is shown below:

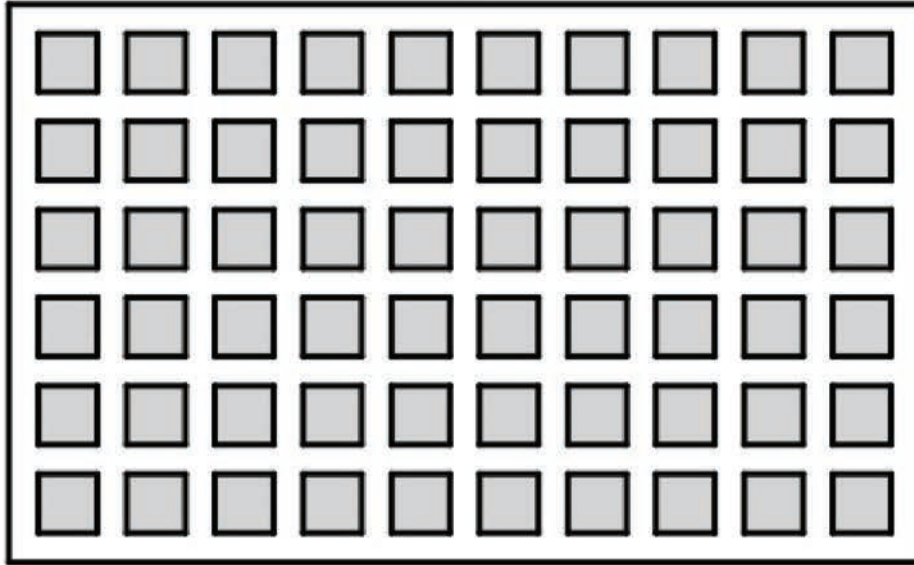


- 1 Grade 1 will plant in the top row of the school garden.

What fraction of the whole school garden does Grade 1 use? 10/60

T1

The response shows understanding that a fraction a/b is represented by the quantity formed by a parts of size $1/b$.



- 2 Grade 2 will plant $\frac{1}{4}$ of the whole school garden. So far they have planted $\frac{1}{6}$ of the whole school garden.

What fraction of the whole school garden still needs to be planted by Grade 2?

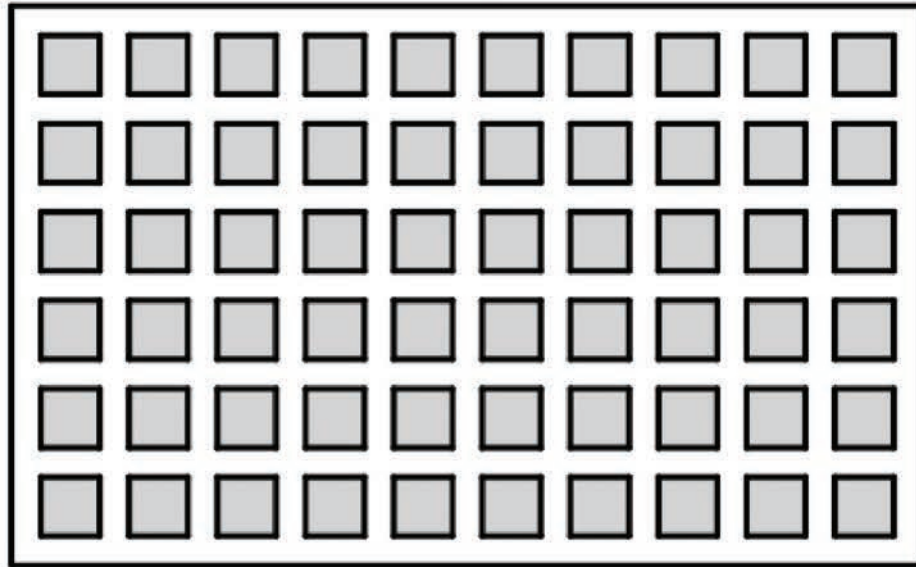
$\frac{1}{5}$

Show your work.

$$\begin{array}{ccc} & \frac{1}{5} & \\ & \downarrow & \\ \frac{1}{4} & \underline{\quad\quad} & \frac{1}{6} \end{array}$$

T2

The response shows an incorrect process for subtracting fractions with unlike denominators. The response shows an incorrect assumption in that the difference of the fractions will be between the two fractions. The response may also show a lack of understanding of how to subtract fractions or a misinterpretation of the context of the trait.



- 3 Later in the school year, Grades 2 and 3 will combine their sections to grow watermelon for the Spring Festival. Grade 2 will plant $\frac{1}{4}$ of the whole school garden and Grade 3 will plant $\frac{1}{10}$ of the whole school garden.

What fraction of the whole school garden will be used in the spring to grow watermelon?

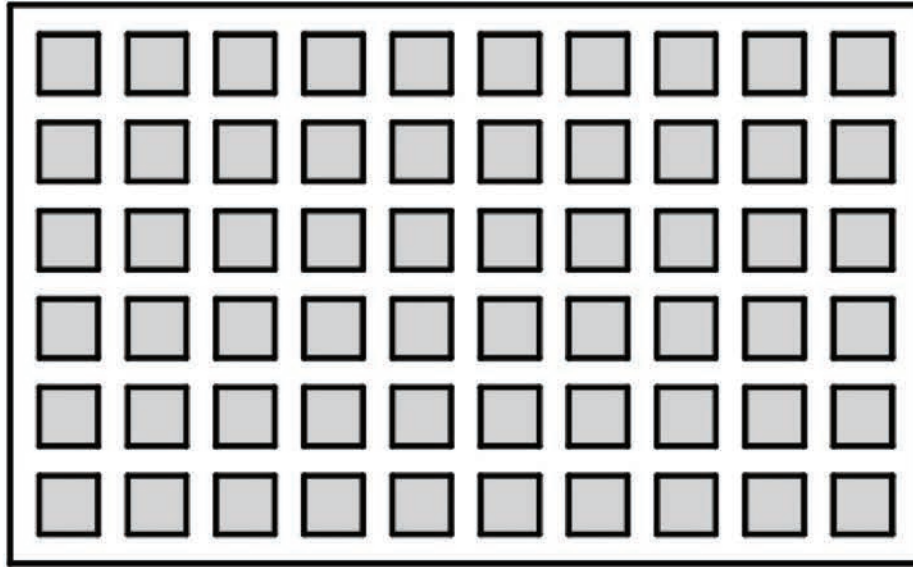
$$\frac{2}{14}$$

T3

The response shows an incorrect process for adding fractions, as the fractions are not converted to fractions that are from the same whole. The response also shows a misconception about the concept of fractions in general, as a result a fraction that is smaller than one of the fractions is given as the total.

Show your work.

$$\frac{1}{4} + \frac{1}{10} = \frac{2}{14}$$



- 4 Grade 4 will plant $\frac{3}{20}$ of the whole school garden. They will use $\frac{1}{3}$ of their plot to plant carrots.

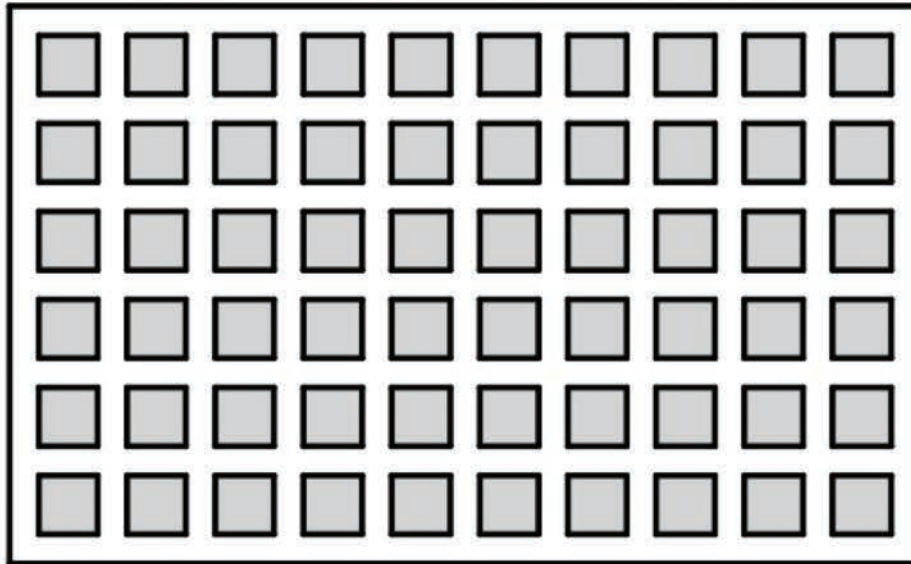
What fraction of the whole school garden will be planted with carrots? $\frac{9}{60}$

Show your work.

$$\frac{3}{20} = \frac{\times 3}{\times 3} = \frac{9}{60}$$

T4

The response shows some understanding of the process of multiplying fractions. However, instead of multiplying by one third, $3/20$ is multiplied by $3/3$. There appears to be a misconception with respect to multiplying by one whole vs. multiplying by a unit fraction.



- 5 This year, Grades 3, 4, and 5 will plant $\frac{9}{20}$ of the school garden altogether. Next year they will gain $\frac{1}{10}$ more of the school garden because they will have more students, while the lower grades will have fewer students.

What fraction of the whole school garden will be used by Grades 3, 4, and 5 next year?

10/30

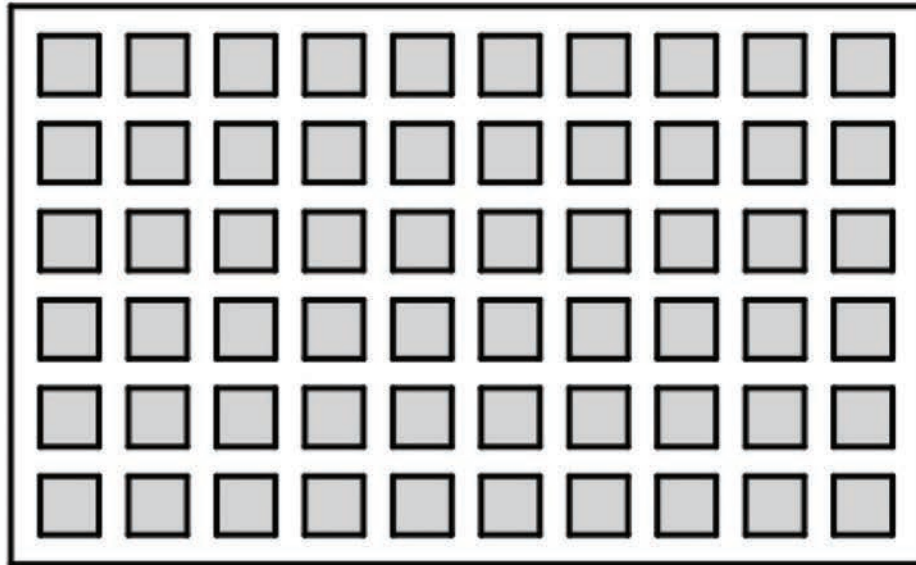
$$\begin{array}{r} 9/20 \\ + 1/10 \\ \hline 10/30 \end{array}$$

Use estimation to explain why your answer is reasonable.

5th grade is going to get $1/10$ of the students so I added $1/10 + 9/20 =$ and I got $10/30$.

T5

The response shows some understanding of solving word problems involving addition of fractions, as an addition equation is used to solve. A misconception regarding fraction addition, in particular creating equivalent fractions, is shown, as the numerators and denominators are added. The response also does not show evidence of using estimation, and instead describes the process used to add $1/10$ and $9/20$.



- 6 Kindergarten and Grade 1 have 16 plots altogether. There are 3 parent helpers that equally share responsibility for the Kindergarten and Grade 1 section.

How many plots is each parent responsible for if they share the plots equally?

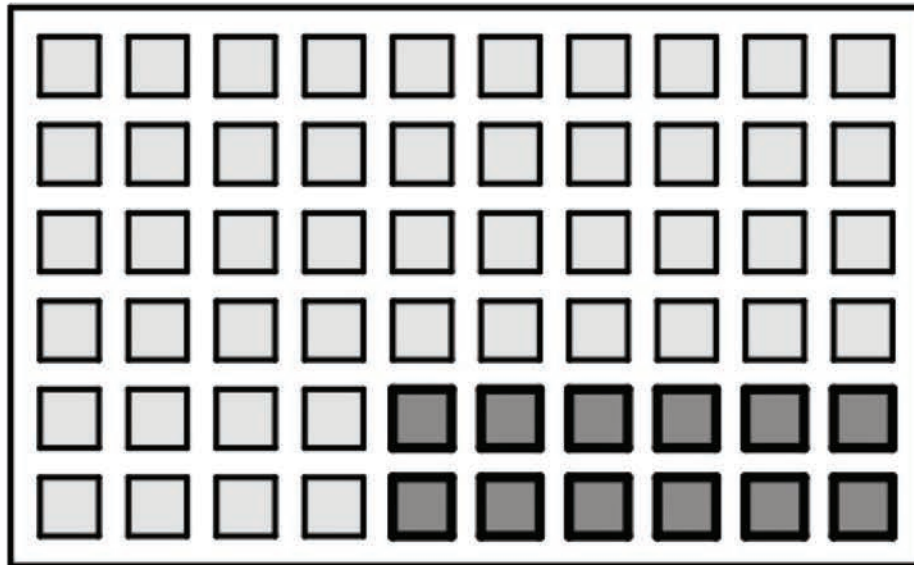
6 plots

Show your work.

$$6 \times 3 = 18$$

T6

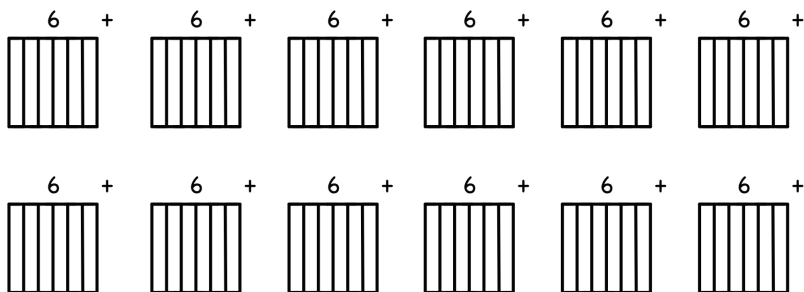
The response shows the beginning of a correct process for solving word problems involving division of whole numbers, leading to answers in the form of mixed numbers by using a multiplication equation to represent the problem. It is reasonable to infer that $6 \times 3 = 18$ was used, since 3 does not divide 16 evenly. Also a misconception regarding the partitioning of a single plot is shown in the response.



- 7 Grade 5 will use 12 plots of the school garden. Each Grade 5 student will plant $\frac{1}{6}$ of a plot.

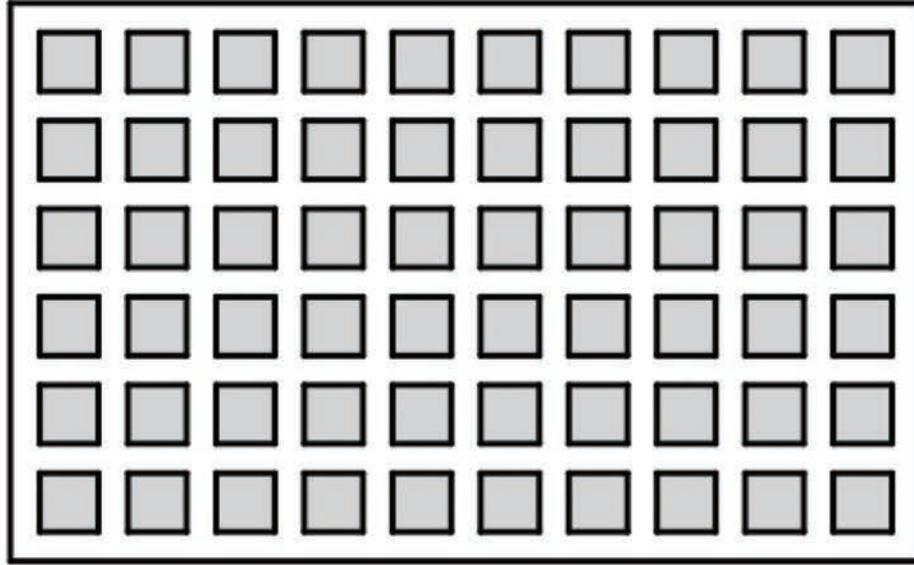
How many students are in Grade 5? 72 students

Show your work.



T7

The response shows a correct process for solving a word problem involving interpreting division of a whole number by a unit fraction and computing such quotients. The response uses a drawing that shows each of the 12 plots divided into sixths, accounting for 6 students per plot (6×12).



- 8 After all the grades planted their plots, they realized that $\frac{1}{30}$ of the garden didn't have anyone to plant in it. They decided to donate the $\frac{1}{30}$ of the whole garden to the two school secretaries. The two school secretaries will share this part equally to grow flowers for the office.

What fraction of the whole school garden does each secretary use? 1/4

Show your work.

1 half divided by 2 = 1 quarter of the whole

T8

The response shows an incorrect process for solving a word problem involving interpreting division of a unit fraction by a whole number and computing such quotients. The response shows some understanding that doubling the denominator will halve the fraction. A misconception in interpreting the quantity to be halved is also shown in the response.

Sample E - Anchor Paper Commentary

Subject/Course: Math

Task Title: School Garden

Grade Level: 5

Year: 2015-2016

Rubric Traits	Anchor Score	Commentary/Rationale	Maximum Score
T1 Trait 1	1	A correct answer of 10/60 is given.	1
T2 Trait 2	0	An incorrect answer of 1/5 is given, and an incorrect process is shown.	2
T3 Trait 3	0	An incorrect answer of 2/14 is given, and an incorrect process is shown, adding the numerators and denominators.	2
T4 Trait 4	0	An incorrect answer of 9/60 is given, and an incorrect equation is used, given by $3/20 \times 3/3$.	2
T5 Trait 5	0	An incorrect answer of 10/30 is given. Estimation is not used to explain the reasonableness of the answer.	2
T6 Trait 6	0	An incorrect answer of 8 plots is given, and incorrect work is shown, using equations to solve. Although a correct process is used, there is not enough evidence to show understanding.	2
T7 Trait 7	2	The correct answer of 72 students is given, and correct work is shown, using a visual model to find the answer.	2
T8 Trait 8	0	An incorrect answer of 1/4 is given, and incorrect work is shown.	2

Score = 3/15, Level 1: Attempting Standards

Trait to Standard Alignment Chart

		Common Core Standards											
Trait	Question	K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Algebra 1	Algebra 2	Geometry
1	1	K.CC.1	1.NBT.1	2.NBT.4	3.MD.7b	4.OA.2	3.NF.1	6.RP.1	7.EE.3	8.F.4	F.IF.4	G.SRT.8	G.CO.9
2	2	K.CC.2	2.NBT.2	2.NBT.4	3.OA.6	4.MD.3	5.NF.1	6.RP.3a	7.EE.1	8.F.4	F.IF.6	G.SRT.8	G.CO.10
3	3	1.NBT.1	1.NBT.5	2.NBT.7	4.NBT.6	4.OA.4	5.NF.1	6.EE.9	7.RP.3	8.F.4	F.BF.1a,b and F.BF.2	G.SRT.8	G.SRT.4
4	4	K.CC.1	2.NBT.8	2.NBT.4	3MD.7b	4.NBT.5	5.NF.4a	6.RP.3c	7.EE.2	8.EE.8b	4.OA.5	G.SRT.8	G.SRT.5
5	5	1.NBT.5	1.NBT.1	2.NBT.1	3.NBT.3	4.OA.5	5.NF.2	6.RP.3b	7.EE.2	8.EE.8a	F.BF.1a,b and F.BF.2	F.BF.1a	G.SRT.5
6	6	K.CC.3	2.NBT.3	2.NBT.1	3.OA.3	4.MD.2	5.NF.3	6.RP.2	7.RP.3	8.F.2	F.IF.5	F.TF.8	G.CO.5
7	7	1.NBT.1	1.NBT.3		3.OA.8	4.OA.3	5.NF.7b	6.RP.3	7.EE.4b	8.F.4	A.REI.7		G.SRT.5
8	8	K.CC.4	2.NBT.4				5.NF.7a				A.SSE.3a		
9	9	K.CC.6	1.OA.7										
10	10	1.NBT.3	2.OA.2										
11	11	K.OA.1	1.OA.1										
12	12	1.OA.7	2.OA.1										
13	13	K.OA.2											
14	14	1.OA.1											